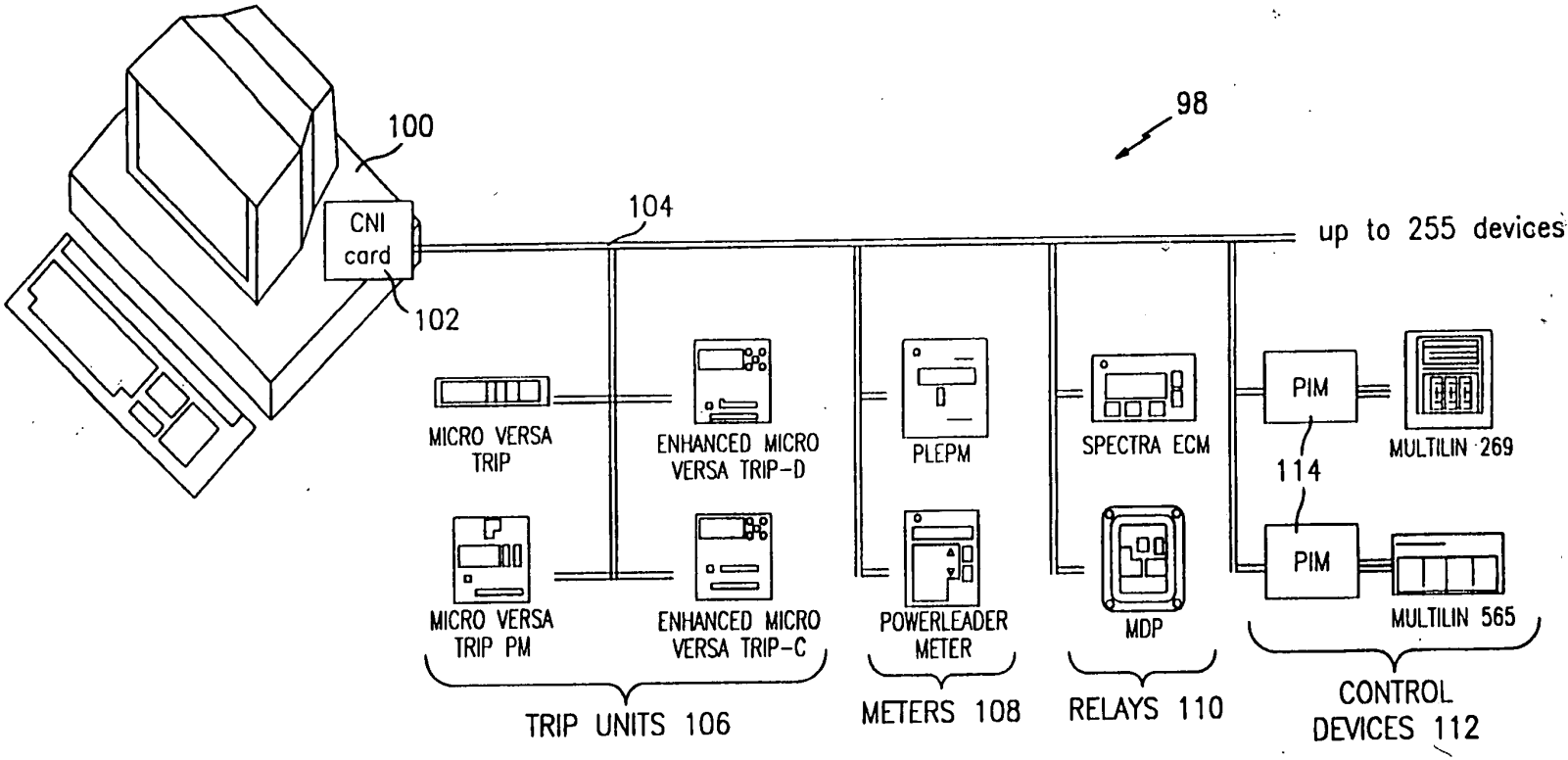


FIG. 1
(PRIOR ART)

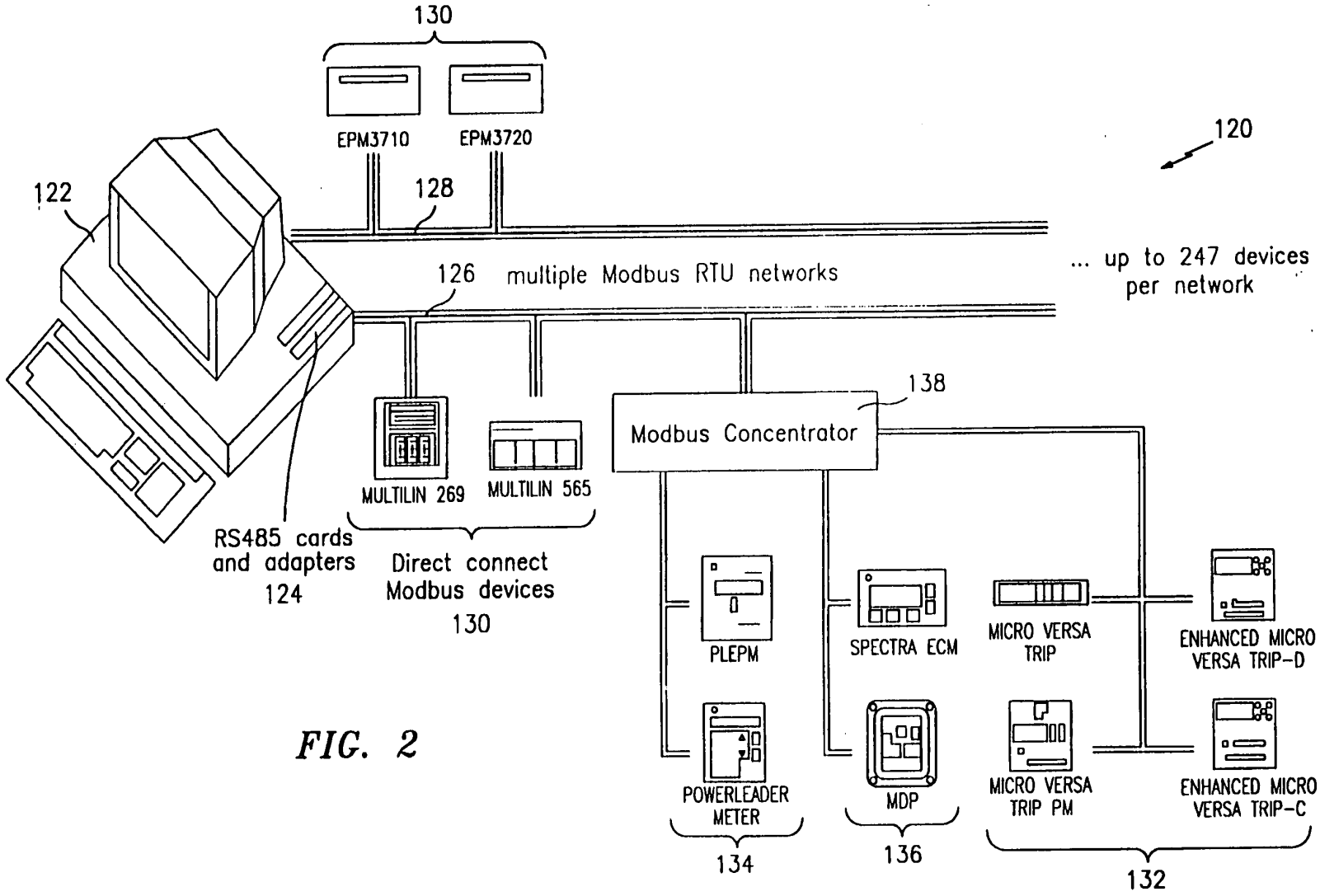


FIG. 2

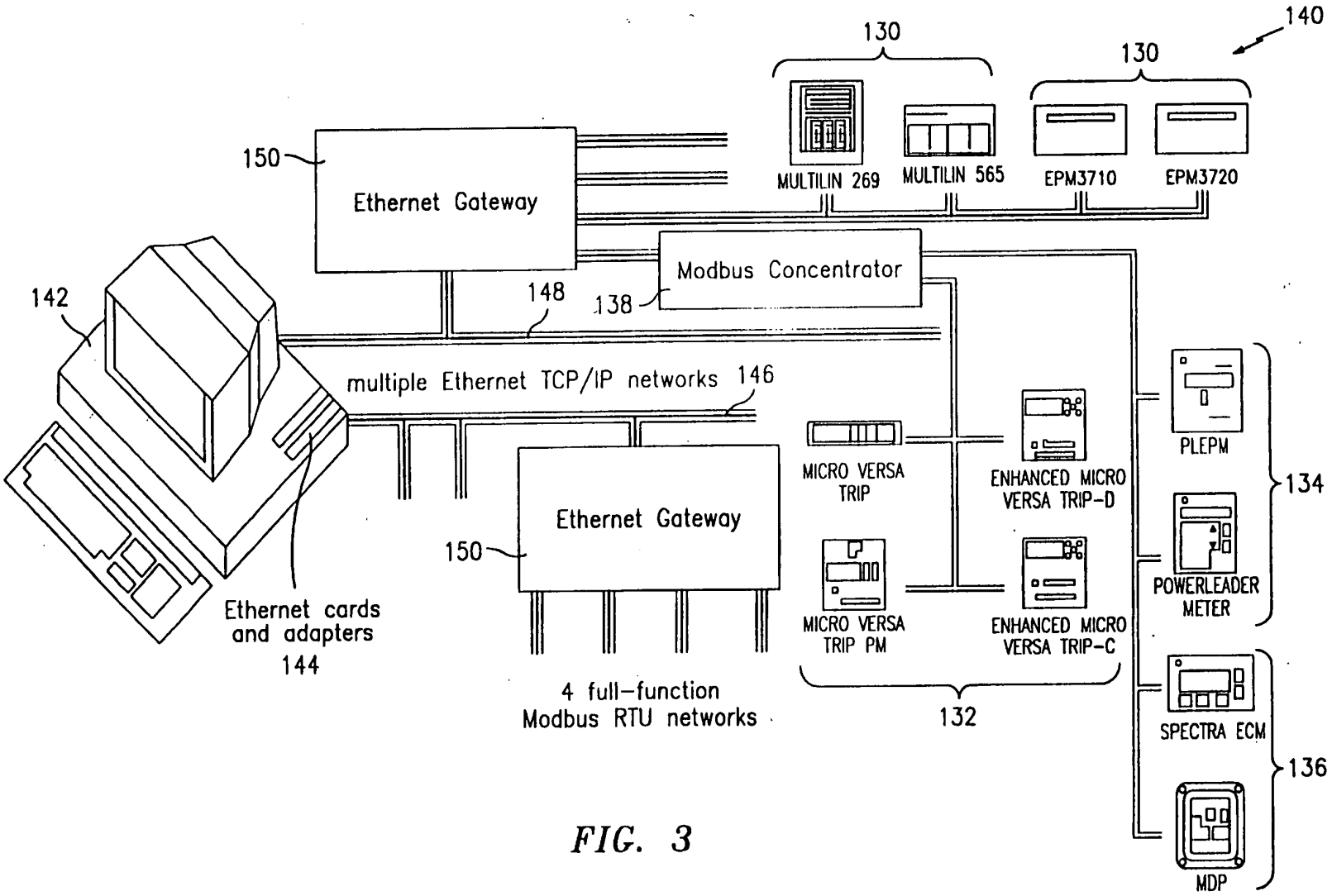


FIG. 3

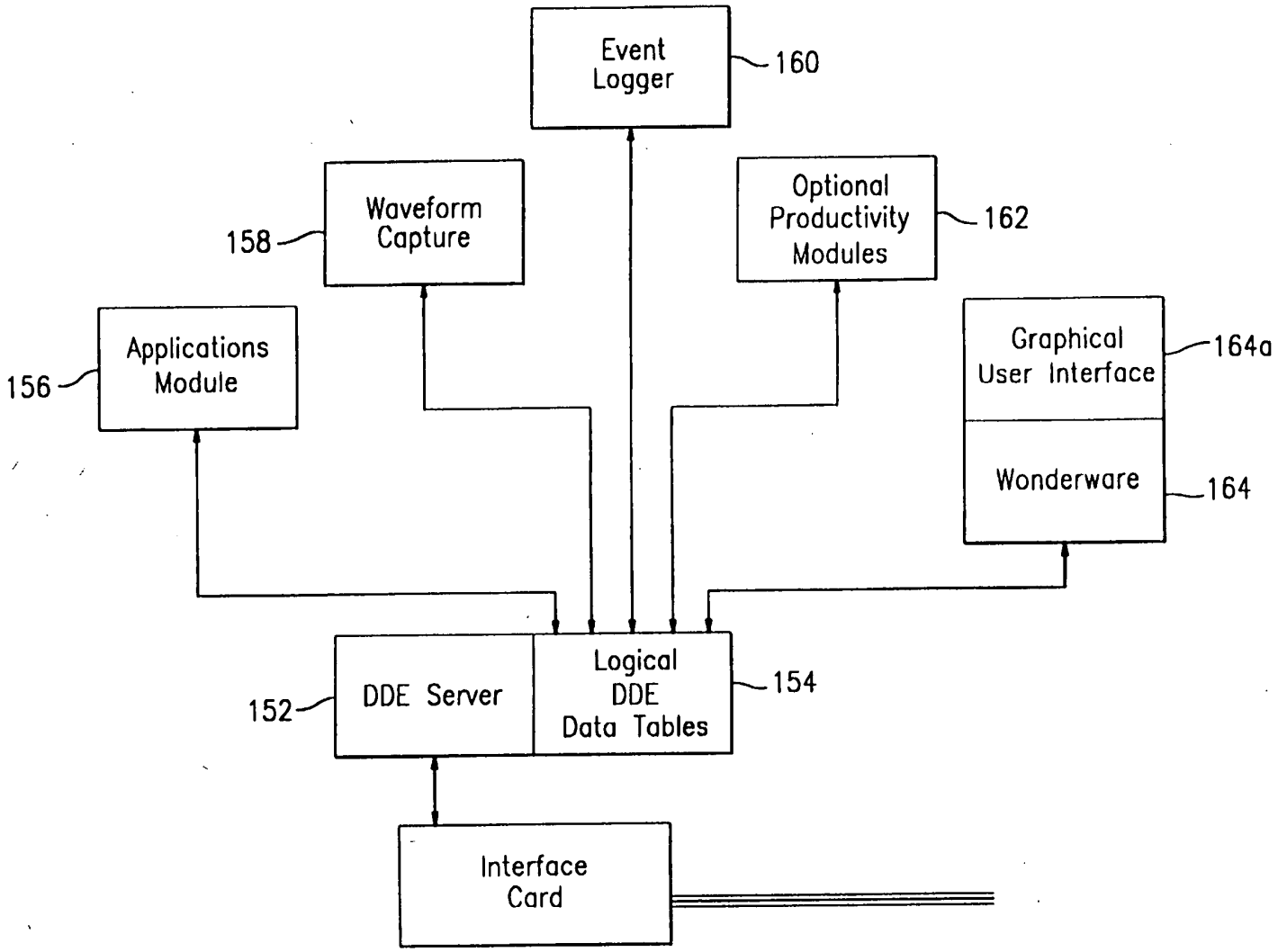


FIG. 4

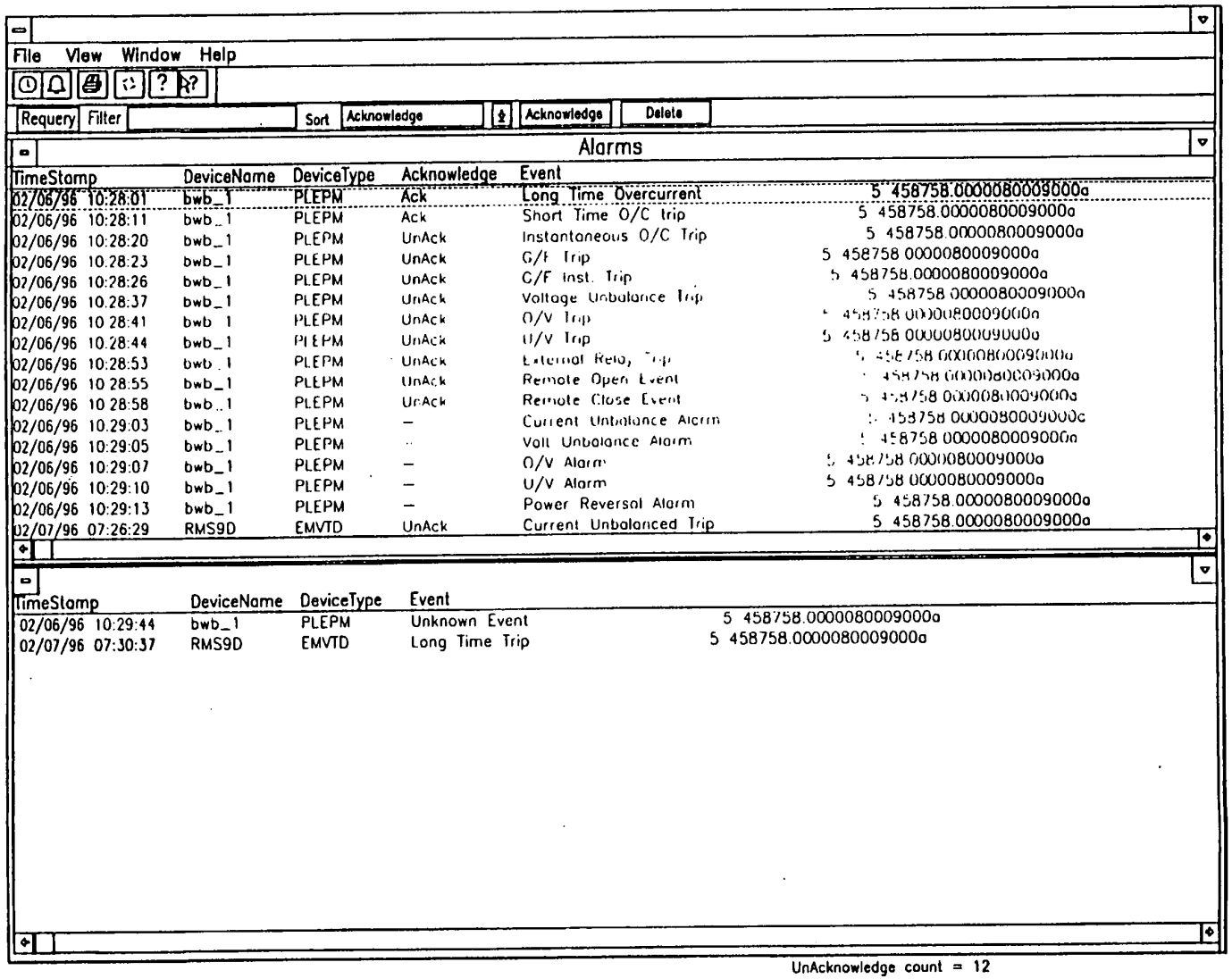

File View Window Help
Requery Filter Sort Acknowledge Acknowledge Delete
Alarms
TimeStamp DeviceName DeviceType Acknowledge Event
02/06/96 10:28:01 bwb_1 PLEPM Ack Long Time Overcurrent 5 458758.0000080009000a
02/06/96 10:28:11 bwb_1 PLEPM Ack Short Time O/C Trip 5 458758.0000080009000a
02/06/96 10:28:20 bwb_1 PLEPM UnAck Instantaneous O/C Trip 5 458758.0000080009000a
02/06/96 10:28:23 bwb_1 PLEPM UnAck G/F Trip 5 458758.0000080009000a
02/06/96 10:28:26 bwb_1 PLEPM UnAck C/F Inst. Trip 5 458758.0000080009000a
02/06/96 10:28:37 bwb_1 PLEPM UnAck Voltage Unbalance Trip 5 458758.0000080009000a
02/06/96 10:28:41 bwb_1 PLEPM UnAck O/V Trip 5 458758.0000080009000a
02/06/96 10:28:44 bwb_1 PLEPM UnAck U/V Trip 5 458758.0000080009000a
02/06/96 10:28:53 bwb_1 PLEPM UnAck External Reld, Trip
02/06/96 10:28:55 bwb_1 PLEPM UnAck Remote Open Event
02/06/96 10:28:58 bwb_1 PLEPM UnAck Remote Close Event
02/06/96 10:29:03 bwb_1 PLEPM — Current Unbalance Alarm
02/06/96 10:29:05 bwb_1 PLEPM — Volt Unbalance Alarm
02/06/96 10:29:07 bwb_1 PLEPM — O/V Alarm 5 458758.0000080009000a
02/06/96 10:29:10 bwb_1 PLEPM — U/V Alarm 5 458758.0000080009000a
02/06/96 10:29:13 bwb_1 PLEPM — Power Reversal Alarm 5 458758.0000080009000a
02/07/96 07:26:29 RMS9D EMVTD UnAck Current Unbalanced Trip 5 458758.0000080009000a
TimeStamp DeviceName DeviceType Event
02/06/96 10:29:44 bwb_1 PLEPM Unknown Event 5 458758.0000080009000a
02/07/96 07:30:37 RMS9D EMVTD Long Time Trip 5 458758.0000080009000a
UnAcknowledge count = 12

FIG. 5

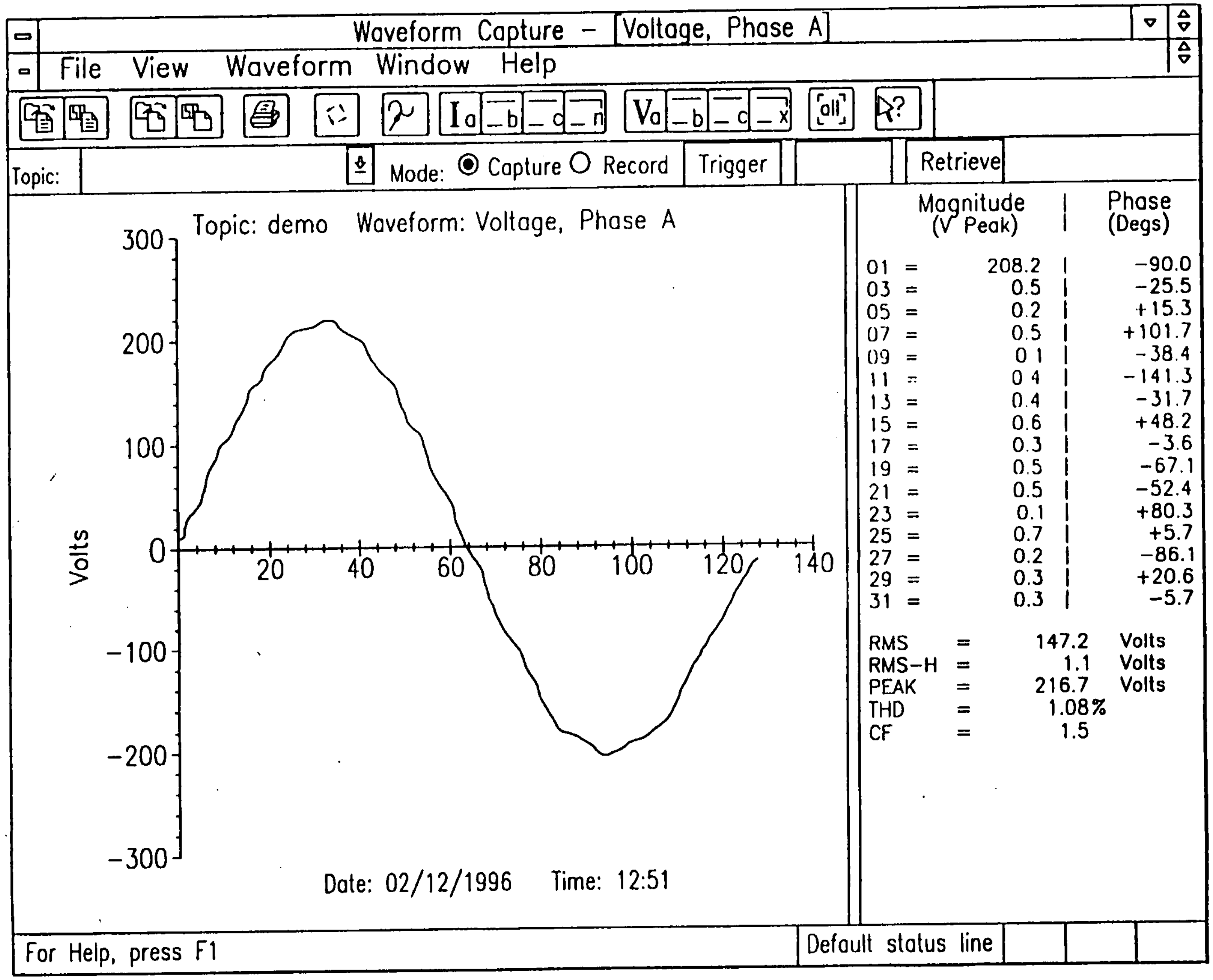

Waveform Capture – Voltage, Phase A
File View Waveform Window Help
Ia b c n
Va b c x
all
Topic:
Mode: Capture Record
Trigger
Retrieve
Topic: demo Waveform: Voltage, Phase A
Volts
300
200
100
0
-100
-200
-300
20
40
60
80
100
120
140
Date: 02/12/1996 Time: 12:51
Magnitude (V Peak)
Phase (Degs)
01 = 208.2 -90.0
03 = 0.5 -25.5
05 = 0.2 +15.3
07 = 0.5 +101.7
09 = 0.1 -38.4
11 = 0.4 -141.3
13 = 0.4 -31.7
15 = 0.6 +48.2
17 = 0.3 -3.6
19 = 0.5 -67.1
21 = 0.5 -52.4
23 = 0.1 +80.3
25 = 0.7 +5.7
27 = 0.2 -86.1
29 = 0.3 +20.6
31 = 0.3 -5.7
RMS = 147.2 Volts
RMS-H = 1.1 Volts
PEAK = 216.7 Volts
THD = 1.08%
CF = 1.5
For Help, press F1
Default status line

FIG. 6

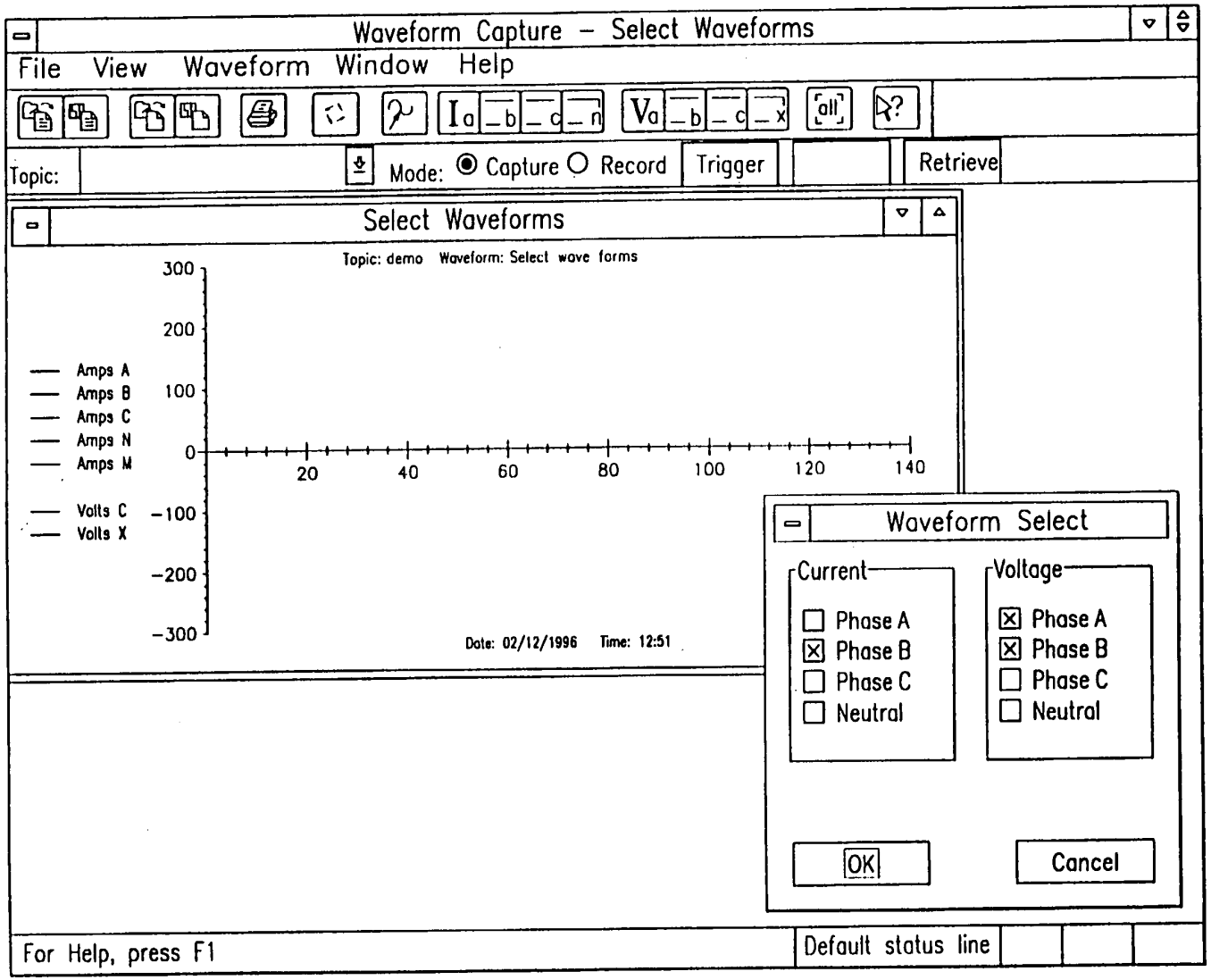


FIG. 7

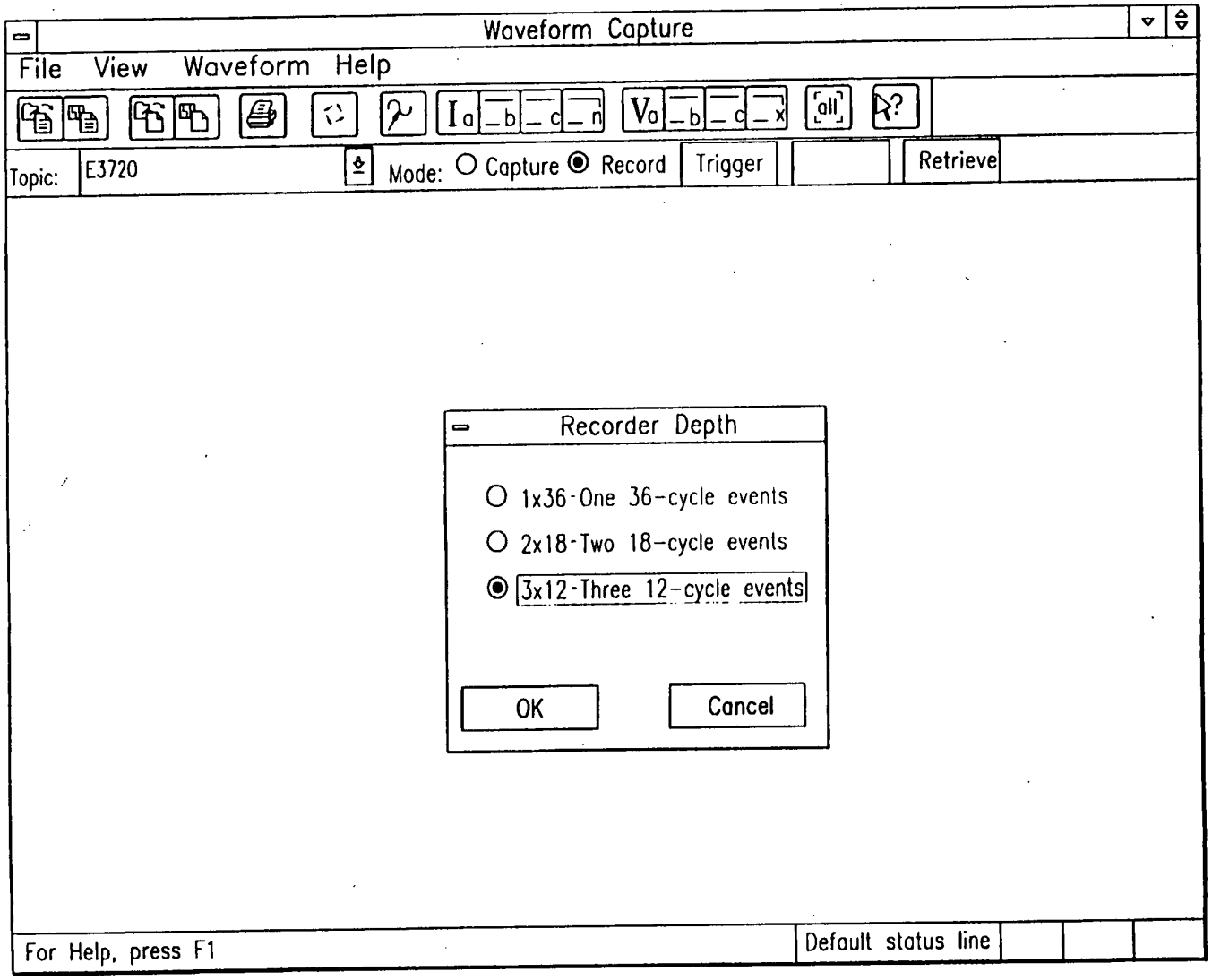


FIG. 8

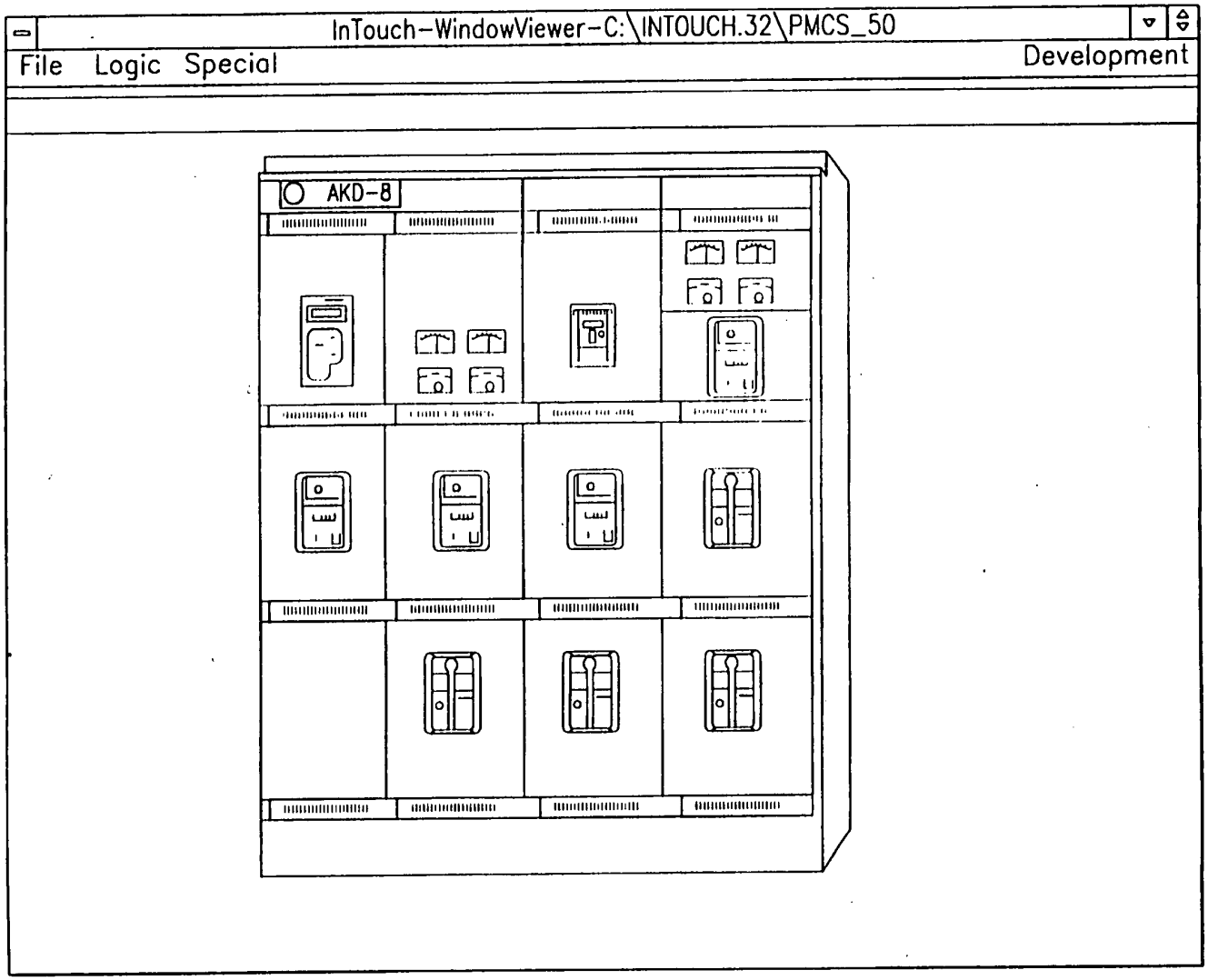


FIG. 9

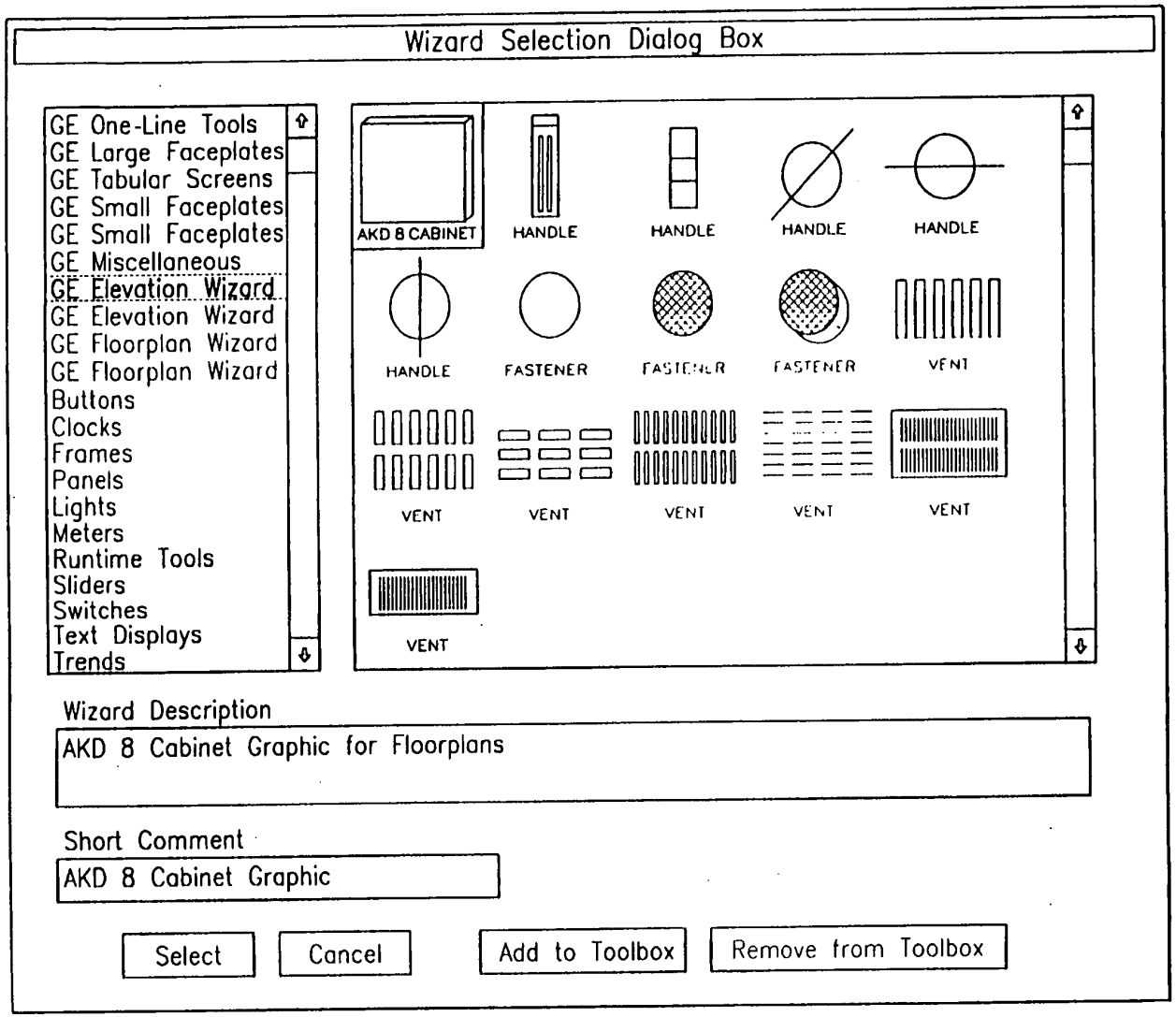


FIG. 10

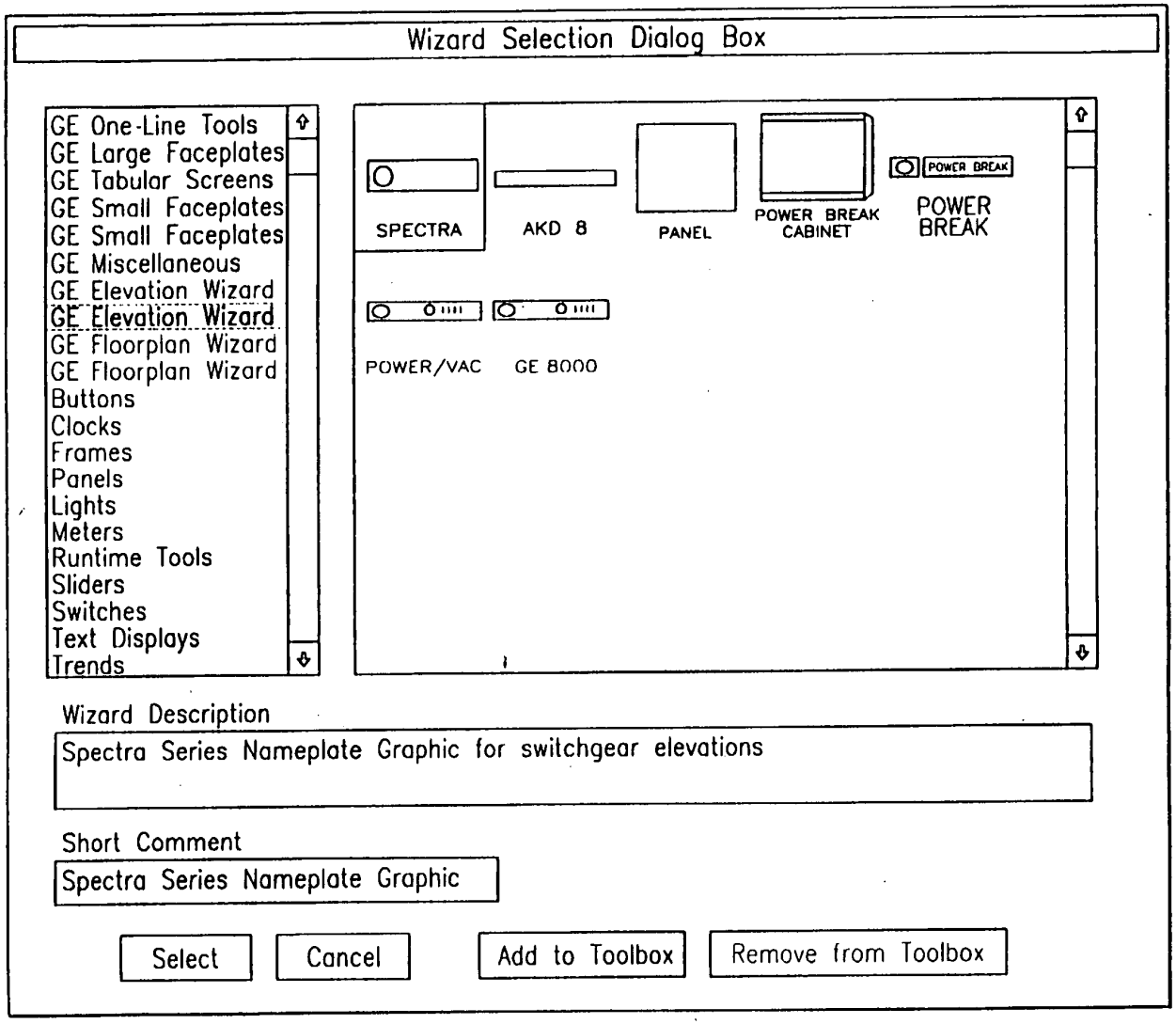

Wizard Selection Dialog Box
GE One-Line Tools
GE Large Faceplates
GE Tabular Screens
GE Small Faceplates
GE Small Faceplates
GE Miscellaneous
GE Elevation Wizard
GE Elevation Wizard
GE Floorplan Wizard
GE Floorplan Wizard
Buttons
Clocks
Frames
Panels
Lights
Meters
Runtime Tools
Sliders
Switches
Text Displays
Trends
SPECTRA
AKD 8
PANEL
POWER BREAK CABINET
POWER BREAK
POWER BREAK
POWER/VAC
GE 8000
Wizard Description
Spectra Series Nameplate Graphic for switchgear elevations
Short Comment
Spectra Series Nameplate Graphic
Select
Cancel
Add to Toolbox
Remove from Toolbox

FIG. 11

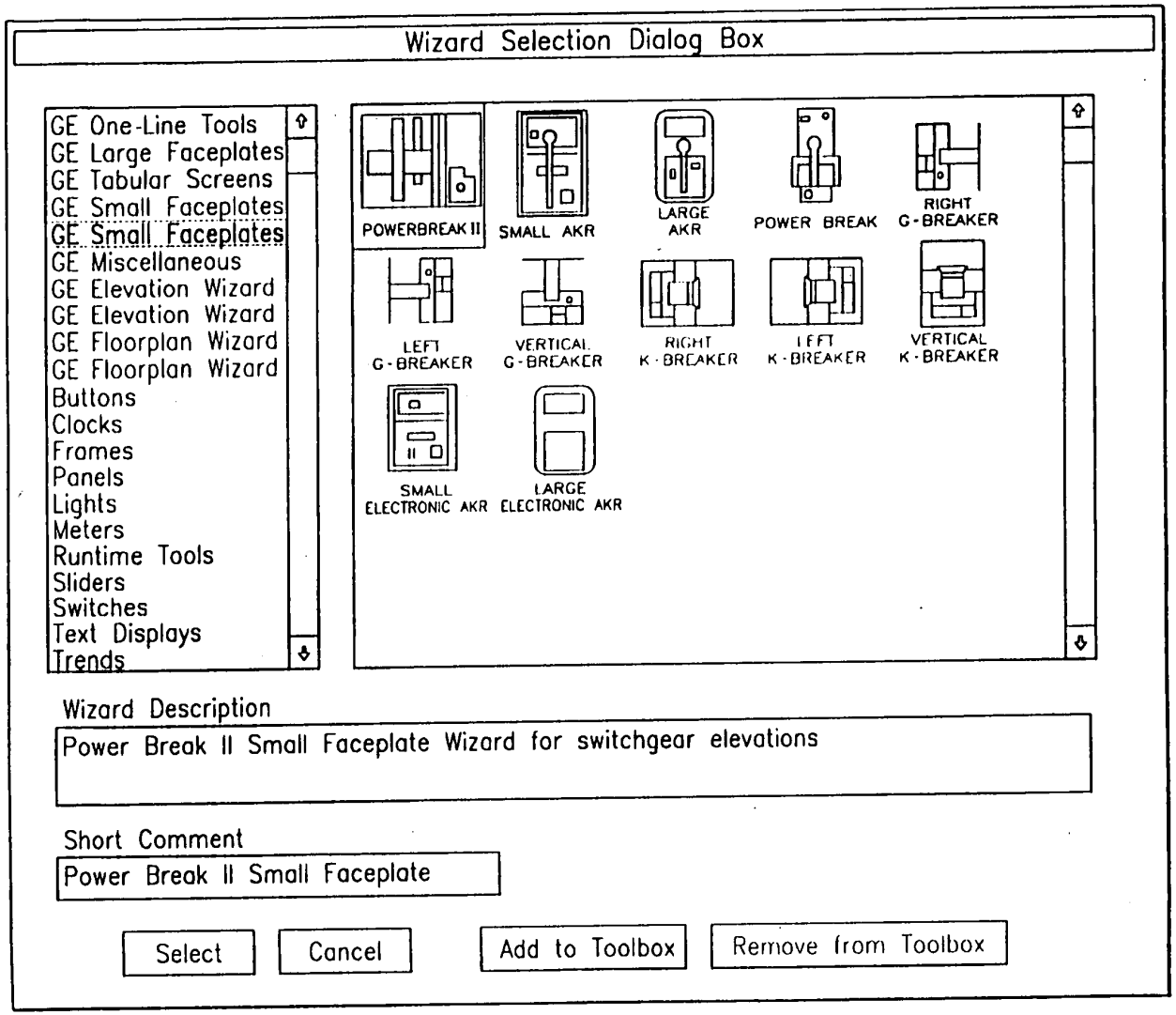


FIG. 12

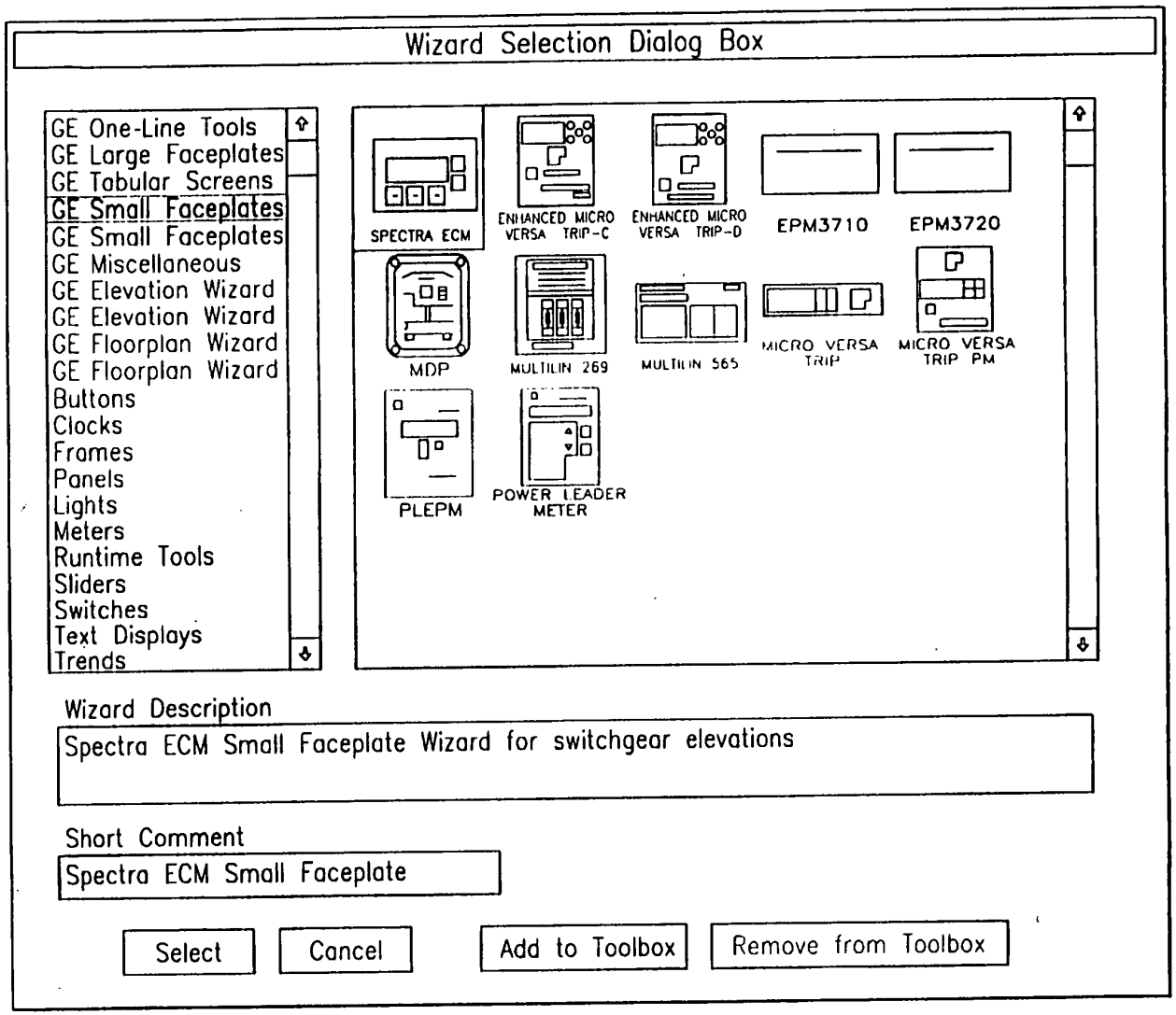

Wizard Selection Dialog Box
GE One-Line Tools
GE Large Faceplates
GE Tabular Screens
GE Small Faceplates
GE Small Faceplates
GE Miscellaneous
GE Elevation Wizard
GE Elevation Wizard
GE Floorplan Wizard
GE Floorplan Wizard
Buttons
Clocks
Frames
Panels
Lights
Meters
Runtime Tools
Sliders
Switches
Text Displays
Trends
SPECTRA ECM
ENHANCED MICRO VERSA TRIP-C
ENHANCED MICRO VERSA TRIP-D
EPM3710
EPM3720
MDP
MULTILIN 269
MULTILIN 565
MICRO VERSA TRIP
MICRO VERSA TRIP PM
PLEPM
POWER LEADER METER
Wizard Description
Spectra ECM Small Faceplate Wizard for switchgear elevations
Short Comment
Spectra ECM Small Faceplate
Select
Cancel
Add to Toolbox
Remove from Toolbox

FIG. 13

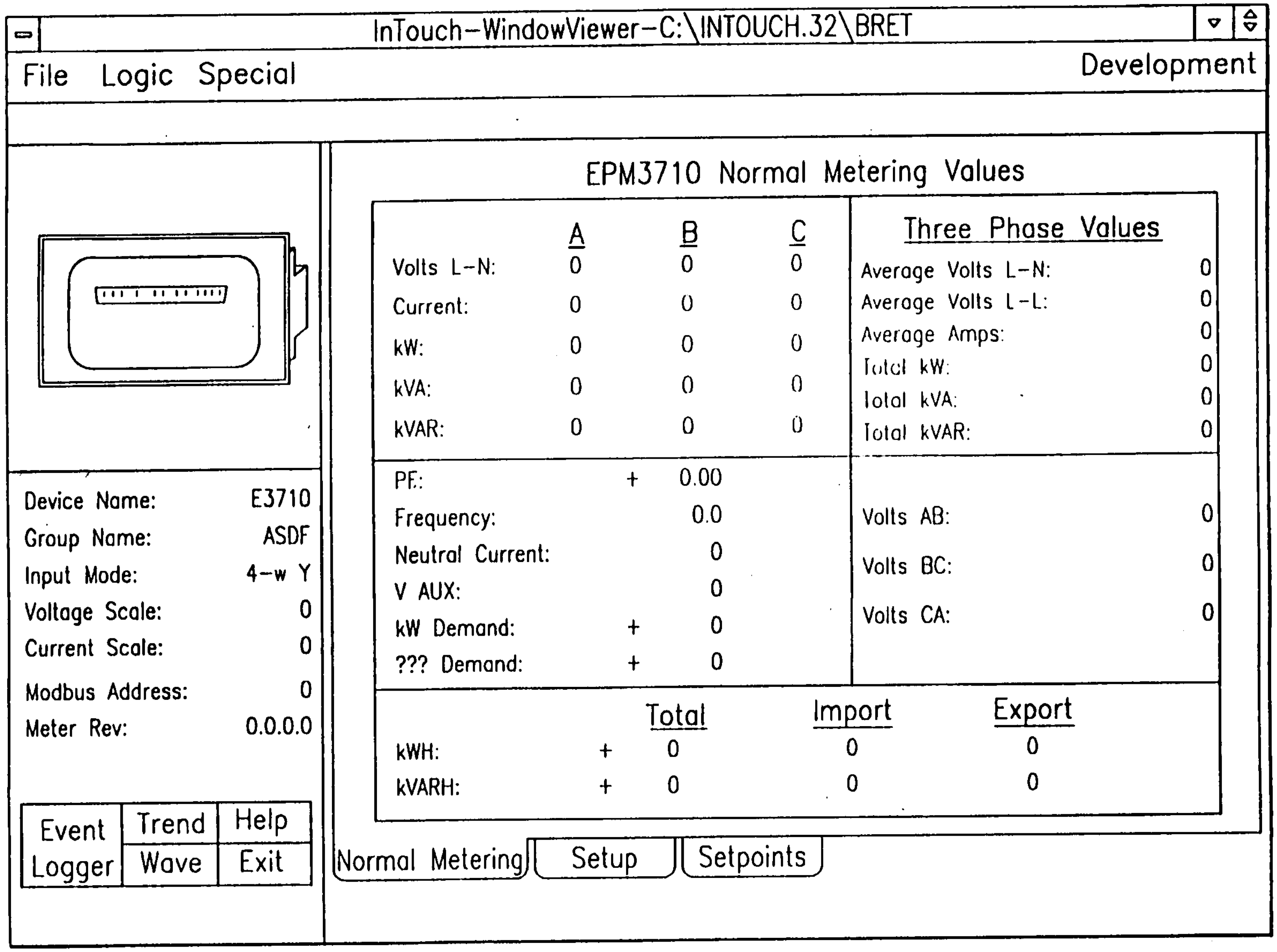

InTouch–WindowViewer–C:\INTOUCH.32\BRET
File Logic Special
Development
Device Name: E3710
Group Name: ASDF
Input Mode: 4–w Y
Voltage Scale: 0
Current Scale: 0
Modbus Address: 0
Meter Rev: 0.0.0.0
Event Logger
Trend
Help
Wave
Exit
EPM3710 Normal Metering Values
A B C
Volts L–N: 0 0 0
Current: 0 0 0
kW: 0 0 0
kVA: 0 0 0
kVAR: 0 0 0
Three Phase Values
Average Volts L–N: 0
Average Volts L–L: 0
Average Amps: 0
Total kW: 0
Total kVA: 0
Total kVAR: 0
PF: + 0.00
Frequency: 0.0
Neutral Current: 0
V AUX: 0
kW Demand: + 0
??? Demand: + 0
Volts AB: 0
Volts BC: 0
Volts CA: 0
Total Import Export
kWH: + 0 0 0
kVARH: + 0 0 0
Normal Metering
Setup
Setpoints

FIG. 14

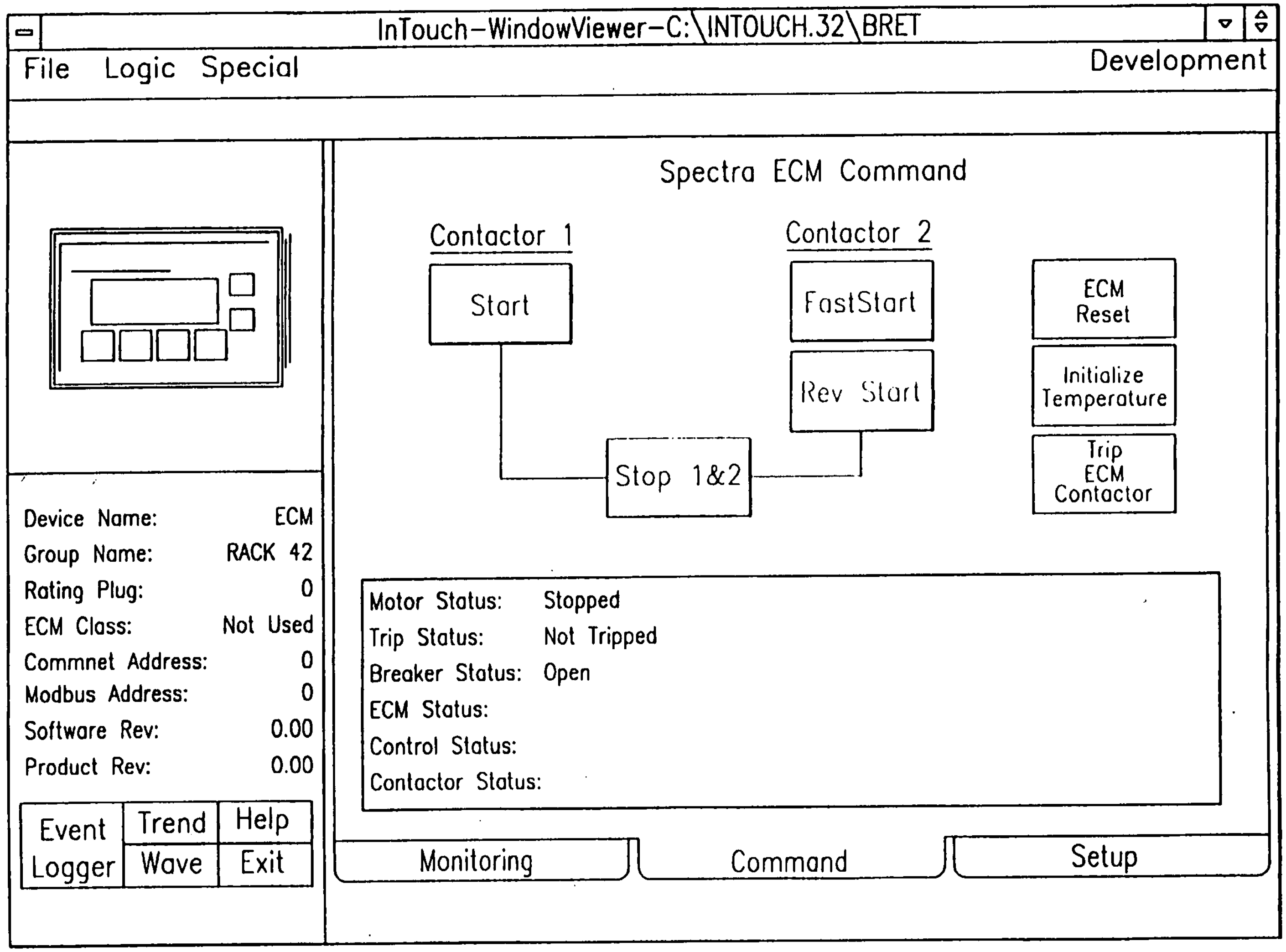

InTouch–WindowViewer–C:\INTOUCH.32\BRET
File
Logic
Special
Development
Spectra ECM Command
Contactor 1
Start
Contactor 2
FastStart
Rev Start
Stop 1&2
ECM Reset
Initialize Temperature
Trip ECM Contactor
Device Name: ECM
Group Name: RACK 42
Rating Plug: 0
ECM Class: Not Used
Commnet Address: 0
Modbus Address: 0
Software Rev: 0.00
Product Rev: 0.00
Event Logger
Trend
Help
Wave
Exit
Motor Status: Stopped
Trip Status: Not Tripped
Breaker Status: Open
ECM Status:
Control Status:
Contactor Status:
Monitoring
Command
Setup

FIG. 15

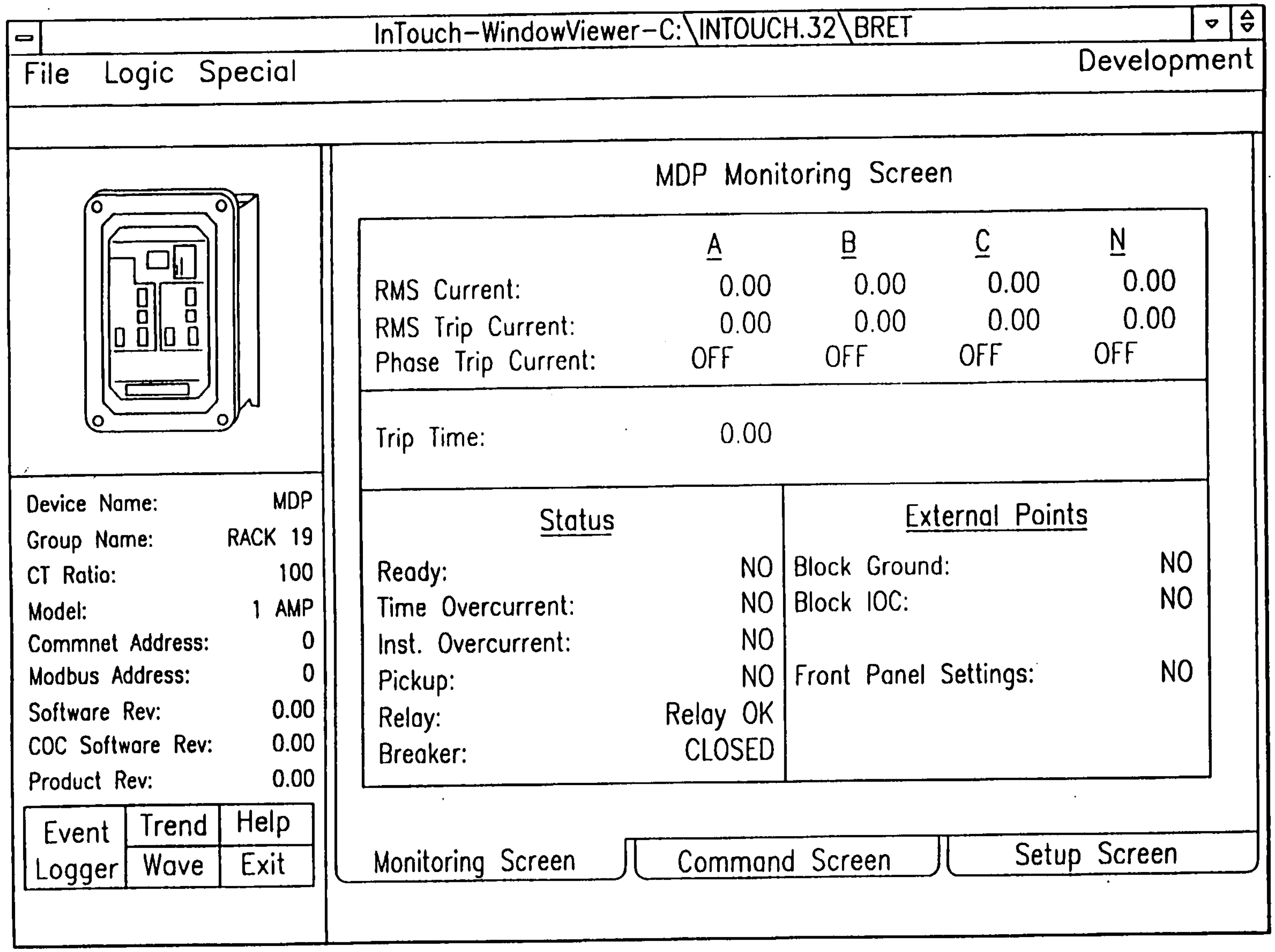

InTouch–WindowViewer–C:\INTOUCH.32\BRET
File Logic Special
Development
MDP Monitoring Screen
A B C N
RMS Current: 0.00 0.00 0.00 0.00
RMS Trip Current: 0.00 0.00 0.00 0.00
Phase Trip Current: OFF OFF OFF OFF
Trip Time: 0.00
Status
Ready: NO
Time Overcurrent: NO
Inst. Overcurrent: NO
Pickup: NO
Relay: Relay OK
Breaker: CLOSED
External Points
Block Ground: NO
Block IOC: NO
Front Panel Settings: NO
Device Name: MDP
Group Name: RACK 19
CT Ratio: 100
Model: 1 AMP
Commnet Address: 0
Modbus Address: 0
Software Rev: 0.00
COC Software Rev: 0.00
Product Rev: 0.00
Event Logger
Trend
Help
Wave
Exit
Monitoring Screen
Command Screen
Setup Screen

FIG. 16

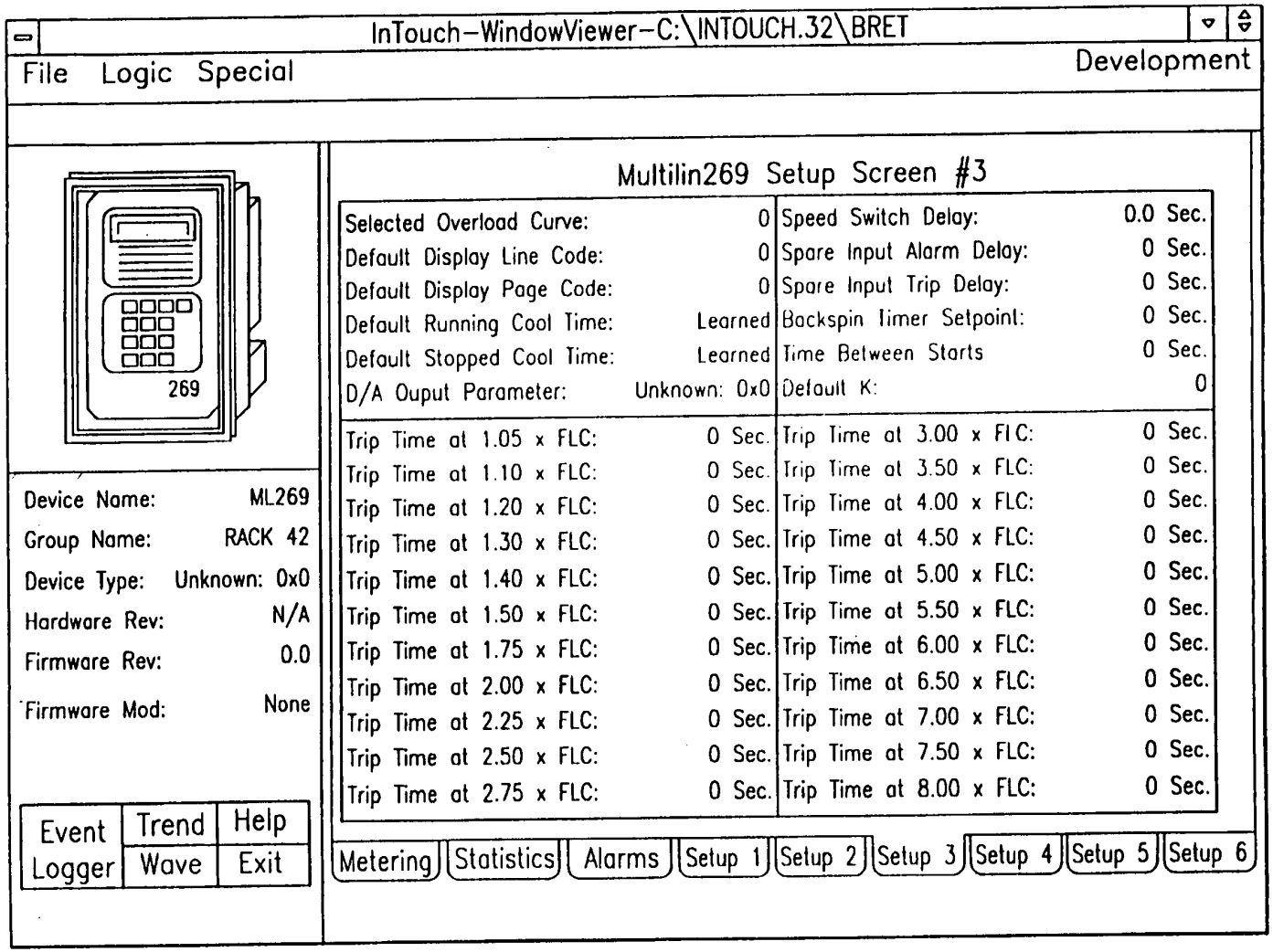

InTouch–WindowViewer–C:\INTOUCH.32\BRET
File Logic Special
Development
269
Device Name: ML269
Group Name: RACK 42
Device Type: Unknown: 0x0
Hardware Rev: N/A
Firmware Rev: 0.0
Firmware Mod: None
Event Logger
Trend Wave
Help Exit
Multilin269 Setup Screen #3
Selected Overload Curve: 0
Default Display Line Code: 0
Default Display Page Code: 0
Default Running Cool Time: Learned
Default Stopped Cool Time: Learned
D/A Ouput Parameter: Unknown: 0x0
Speed Switch Delay: 0.0 Sec.
Spare Input Alarm Delay: 0 Sec.
Spare Input Trip Delay: 0 Sec.
Backspin Timer Setpoint: 0 Sec.
Time Between Starts 0 Sec.
Default K: 0
Trip Time at 1.05 x FLC: 0 Sec.
Trip Time at 1.10 x FLC: 0 Sec.
Trip Time at 1.20 x FLC: 0 Sec.
Trip Time at 1.30 x FLC: 0 Sec.
Trip Time at 1.40 x FLC: 0 Sec.
Trip Time at 1.50 x FLC: 0 Sec.
Trip Time at 1.75 x FLC: 0 Sec.
Trip Time at 2.00 x FLC: 0 Sec.
Trip Time at 2.25 x FLC: 0 Sec.
Trip Time at 2.50 x FLC: 0 Sec.
Trip Time at 2.75 x FLC: 0 Sec.
Trip Time at 3.00 x FLC: 0 Sec.
Trip Time at 3.50 x FLC: 0 Sec.
Trip Time at 4.00 x FLC: 0 Sec.
Trip Time at 4.50 x FLC: 0 Sec.
Trip Time at 5.00 x FLC: 0 Sec.
Trip Time at 5.50 x FLC: 0 Sec.
Trip Time at 6.00 x FLC: 0 Sec.
Trip Time at 6.50 x FLC: 0 Sec.
Trip Time at 7.00 x FLC: 0 Sec.
Trip Time at 7.50 x FLC: 0 Sec.
Trip Time at 8.00 x FLC: 0 Sec.
Metering
Statistics
Alarms
Setup 1
Setup 2
Setup 3
Setup 4
Setup 5
Setup 6

FIG. 17

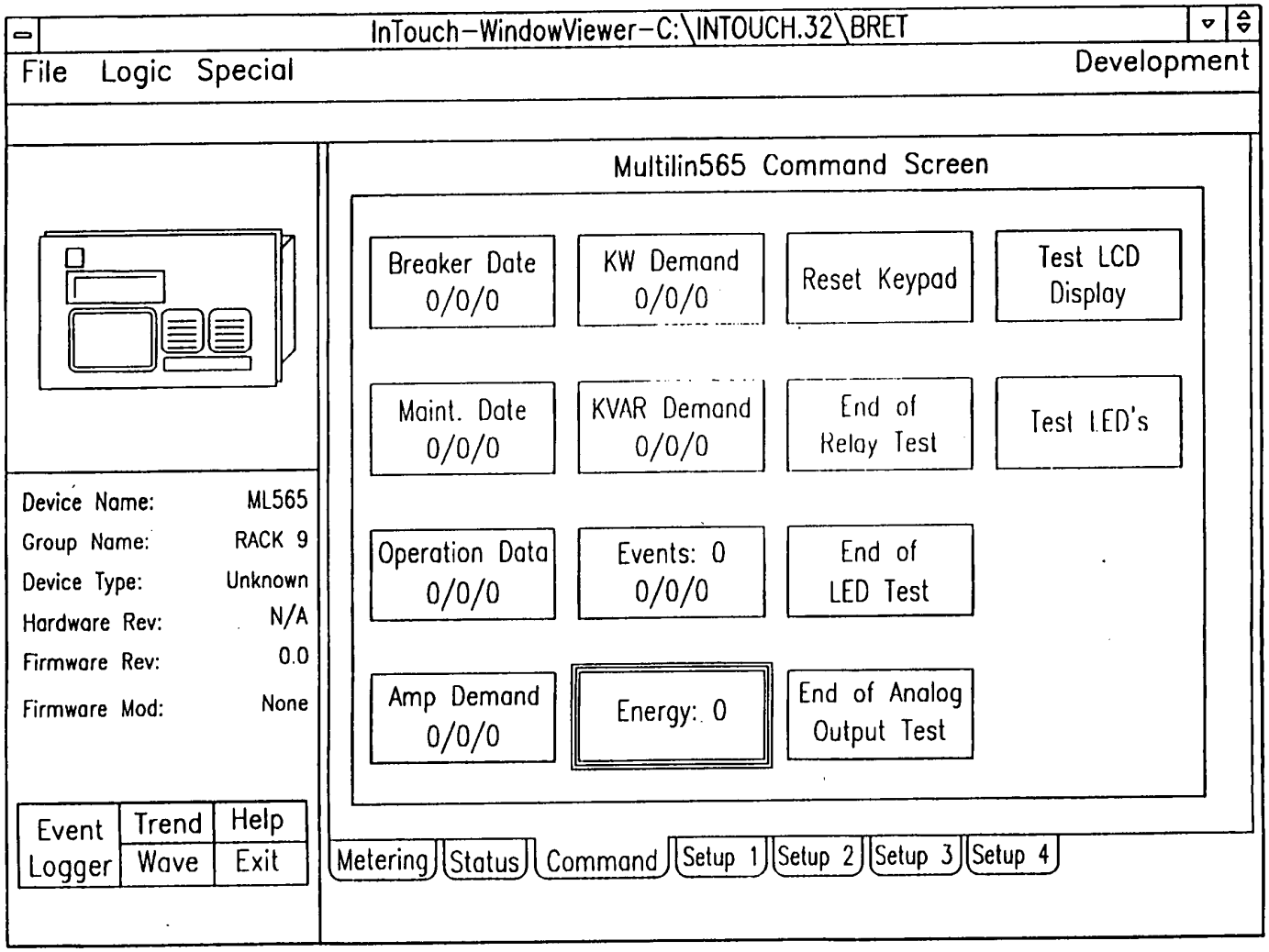

InTouch-WindowViewer-C:\INTOUCH.32\BRET
File Logic Special
Development
Multilin565 Command Screen
Breaker Date 0/0/0
KW Demand 0/0/0
Reset Keypad
Test LCD Display
Maint. Date 0/0/0
KVAR Demand 0/0/0
End of Relay Test
Test LED's
Operation Data 0/0/0
Events: 0 0/0/0
End of LED Test
Amp Demand 0/0/0
Energy: 0
End of Analog Output Test
Device Name: ML565
Group Name: RACK 9
Device Type: Unknown
Hardware Rev: N/A
Firmware Rev: 0.0
Firmware Mod: None
Event Logger
Trend
Wave
Help
Exit
Metering
Status
Command
Setup 1
Setup 2
Setup 3
Setup 4

FIG. 18

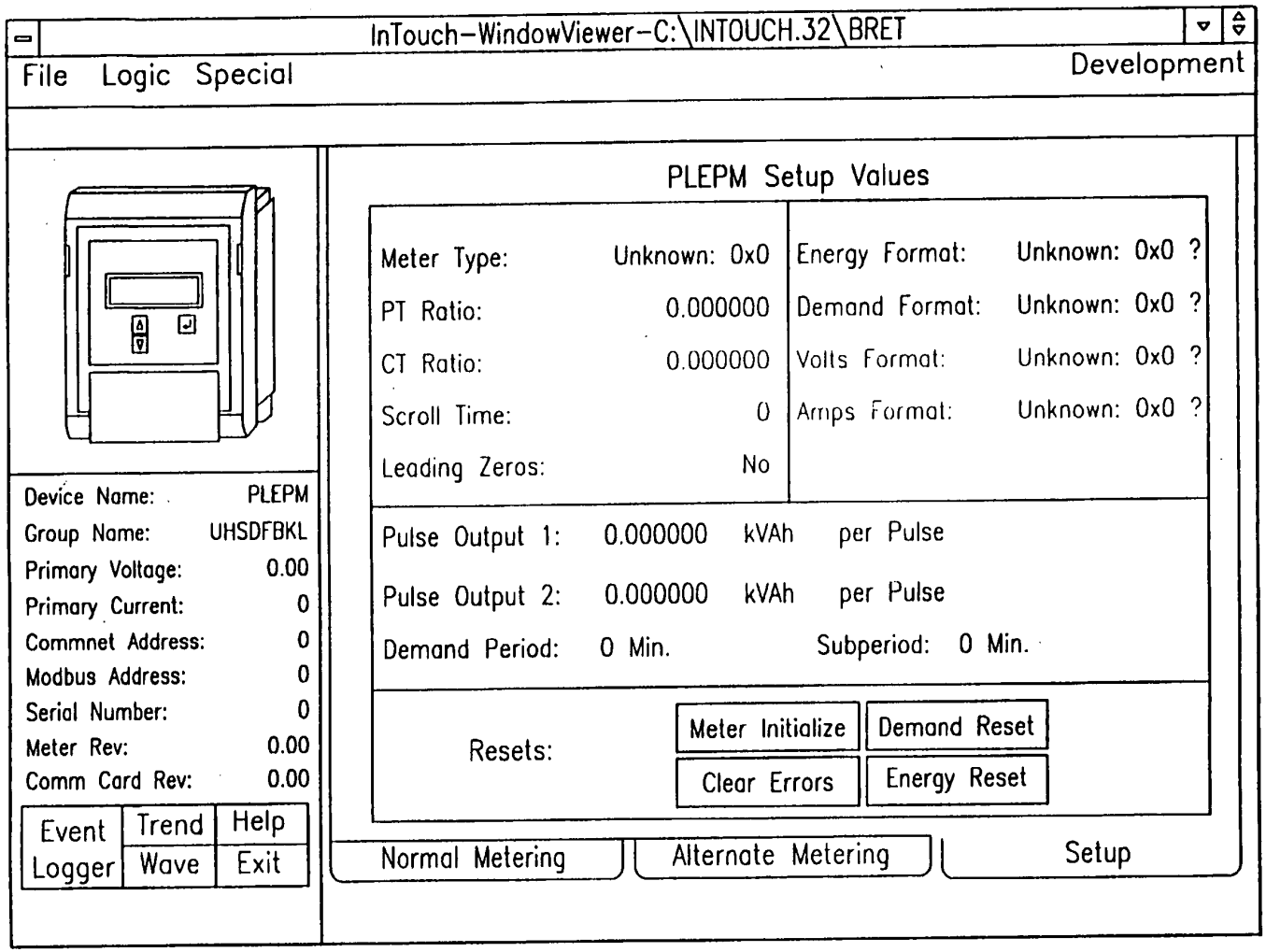

InTouch-WindowViewer-C:\INTOUCH.32\BRET
File Logic Special
Development
PLEPM Setup Values
Meter Type: Unknown: 0x0
PT Ratio: 0.000000
CT Ratio: 0.000000
Scroll Time: 0
Leading Zeros: No
Energy Format: Unknown: 0x0 ?
Demand Format: Unknown: 0x0 ?
Volts Format: Unknown: 0x0 ?
Amps Format: Unknown: 0x0 ?
Pulse Output 1: 0.000000 kVAh per Pulse
Pulse Output 2: 0.000000 kVAh per Pulse
Demand Period: 0 Min.
Subperiod: 0 Min.
Resets:
Meter Initialize
Demand Reset
Clear Errors
Energy Reset
Device Name: PLEPM
Group Name: UHSDFBKL
Primary Voltage: 0.00
Primary Current: 0
Commnet Address: 0
Modbus Address: 0
Serial Number: 0
Meter Rev: 0.00
Comm Card Rev: 0.00
Event Logger
Trend
Wave
Help
Exit
Normal Metering
Alternate Metering
Setup

FIG. 19

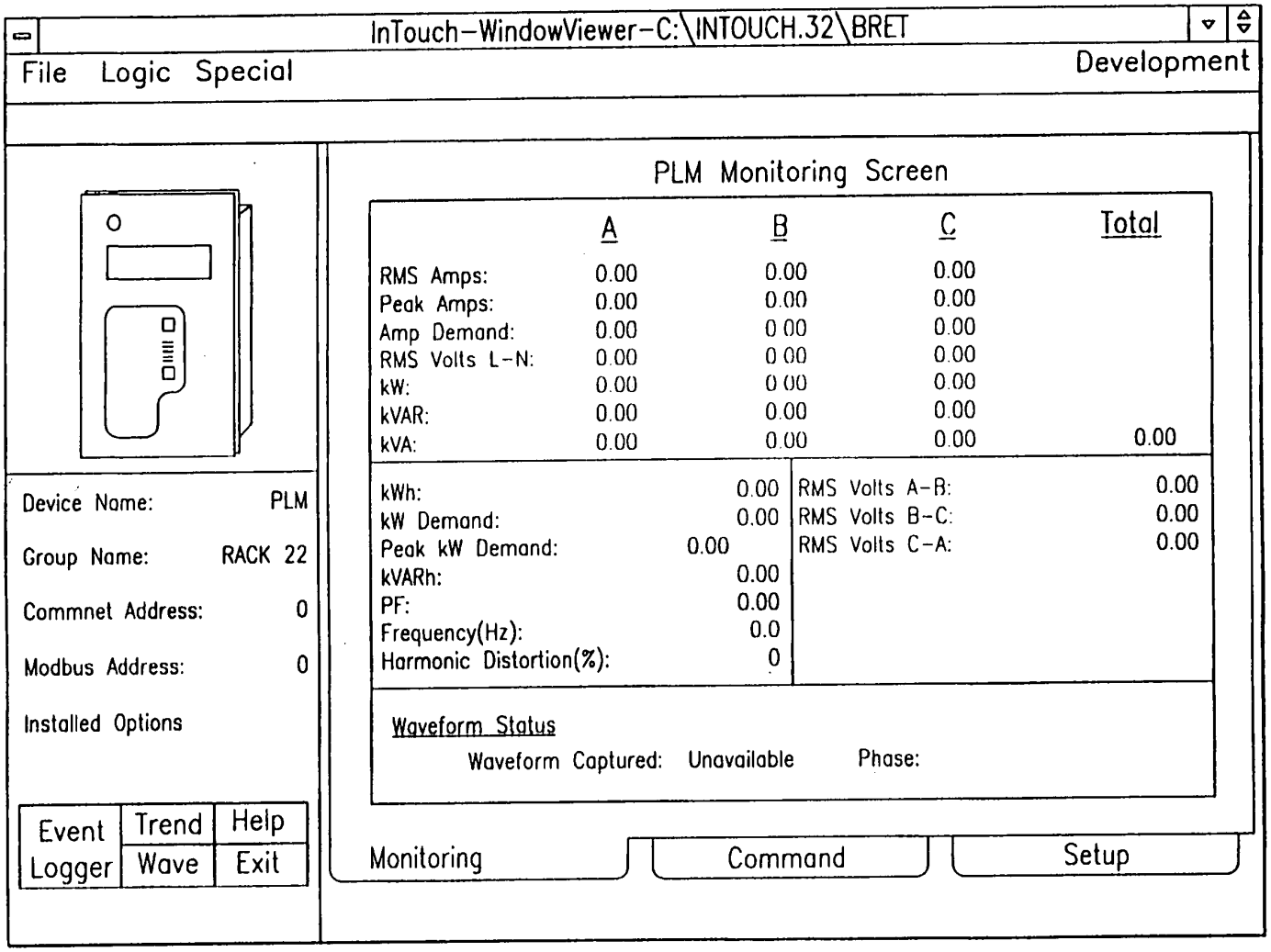

InTouch-WindowViewer-C:\INTOUCH.32\BRET
File Logic Special
Development
PLM Monitoring Screen
A
B
C
Total
RMS Amps: 0.00 0.00 0.00
Peak Amps: 0.00 0.00 0.00
Amp Demand: 0.00 0.00 0.00
RMS Volts L-N: 0.00 0.00 0.00
kW: 0.00 0.00 0.00
kVAR: 0.00 0.00 0.00
kVA: 0.00 0.00 0.00 0.00
kWh: 0.00
kW Demand: 0.00
Peak kW Demand: 0.00
kVARh: 0.00
PF: 0.00
Frequency(Hz): 0.0
Harmonic Distortion(%): 0
RMS Volts A-B: 0.00
RMS Volts B-C: 0.00
RMS Volts C-A: 0.00
Waveform Status
Waveform Captured: Unavailable
Phase:
Device Name: PLM
Group Name: RACK 22
Commnet Address: 0
Modbus Address: 0
Installed Options
Event Logger
Trend
Wave
Help
Exit
Monitoring
Command
Setup

FIG. 20

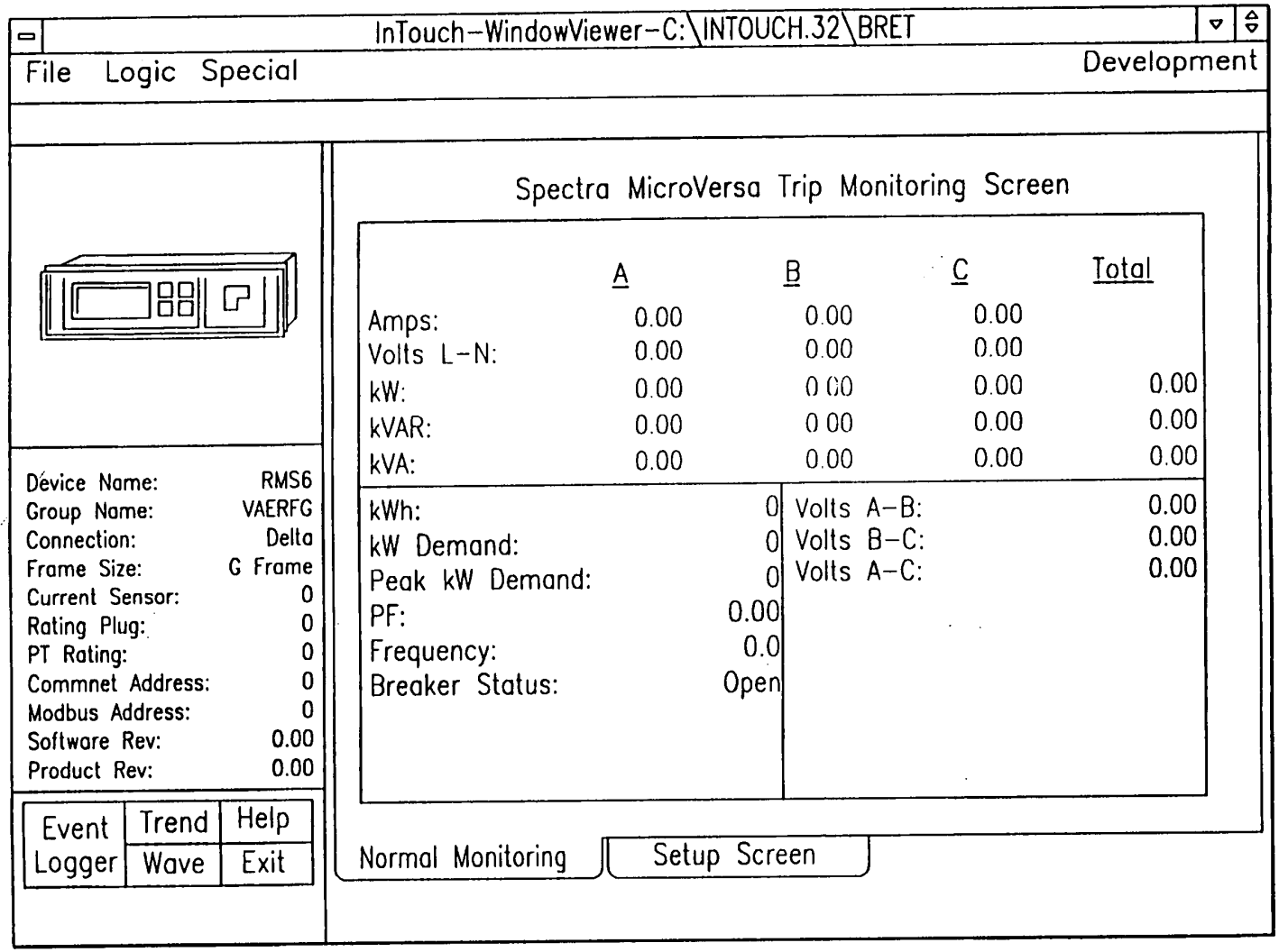

InTouch-WindowViewer-C:\INTOUCH.32\BRET
File Logic Special
Development
Spectra MicroVersa Trip Monitoring Screen
A B C Total
Amps: 0.00 0.00 0.00
Volts L-N: 0.00 0.00 0.00
kW: 0.00 0.00 0.00 0.00
kVAR: 0.00 0.00 0.00 0.00
kVA: 0.00 0.00 0.00 0.00
kWh: 0
kW Demand: 0
Peak kW Demand: 0
PF: 0.00
Frequency: 0.0
Breaker Status: Open
Volts A-B: 0.00
Volts B-C: 0.00
Volts A-C: 0.00
Device Name: RMS6
Group Name: VAERFG
Connection: Delta
Frame Size: G Frame
Current Sensor: 0
Rating Plug: 0
PT Rating: 0
Commnet Address: 0
Modbus Address: 0
Software Rev: 0.00
Product Rev: 0.00
Event Logger
Trend
Wave
Help
Exit
Normal Monitoring
Setup Screen

FIG. 21

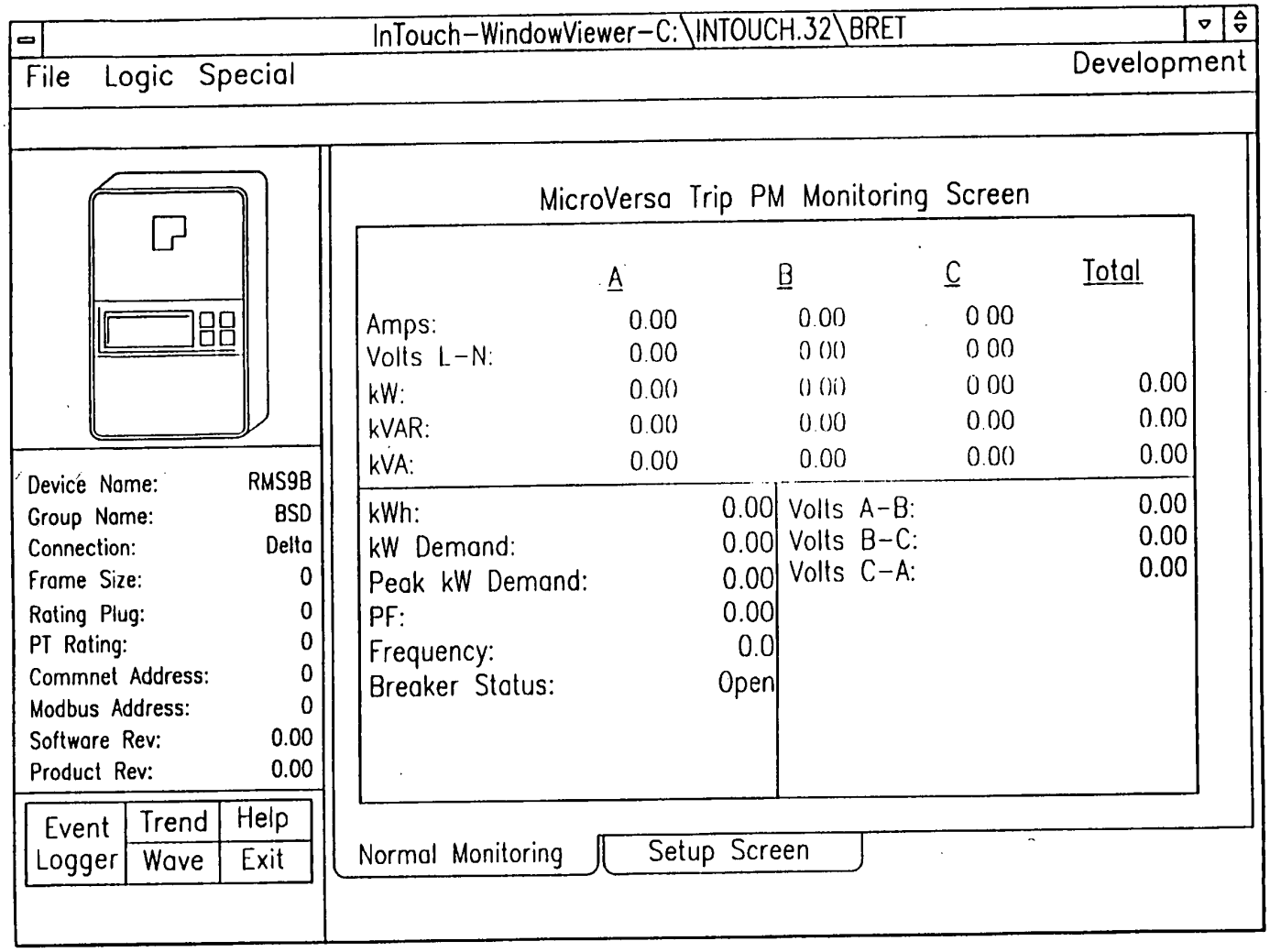

InTouch-WindowViewer-C:\INTOUCH.32\BRET
File Logic Special
Development
MicroVersa Trip PM Monitoring Screen
A B C Total
Amps: 0.00 0.00 0.00
Volts L-N: 0.00 0.00 0.00
kW: 0.00 0.00 0.00 0.00
kVAR: 0.00 0.00 0.00 0.00
kVA: 0.00 0.00 0.00 0.00
kWh: 0.00
kW Demand: 0.00
Peak kW Demand: 0.00
PF: 0.00
Frequency: 0.0
Breaker Status: Open
Volts A-B: 0.00
Volts B-C: 0.00
Volts C-A: 0.00
Device Name: RMS9B
Group Name: BSD
Connection: Delta
Frame Size: 0
Rating Plug: 0
PT Rating: 0
Commnet Address: 0
Modbus Address: 0
Software Rev: 0.00
Product Rev: 0.00
Event Logger
Trend
Wave
Help
Exit
Normal Monitoring
Setup Screen

FIG. 22

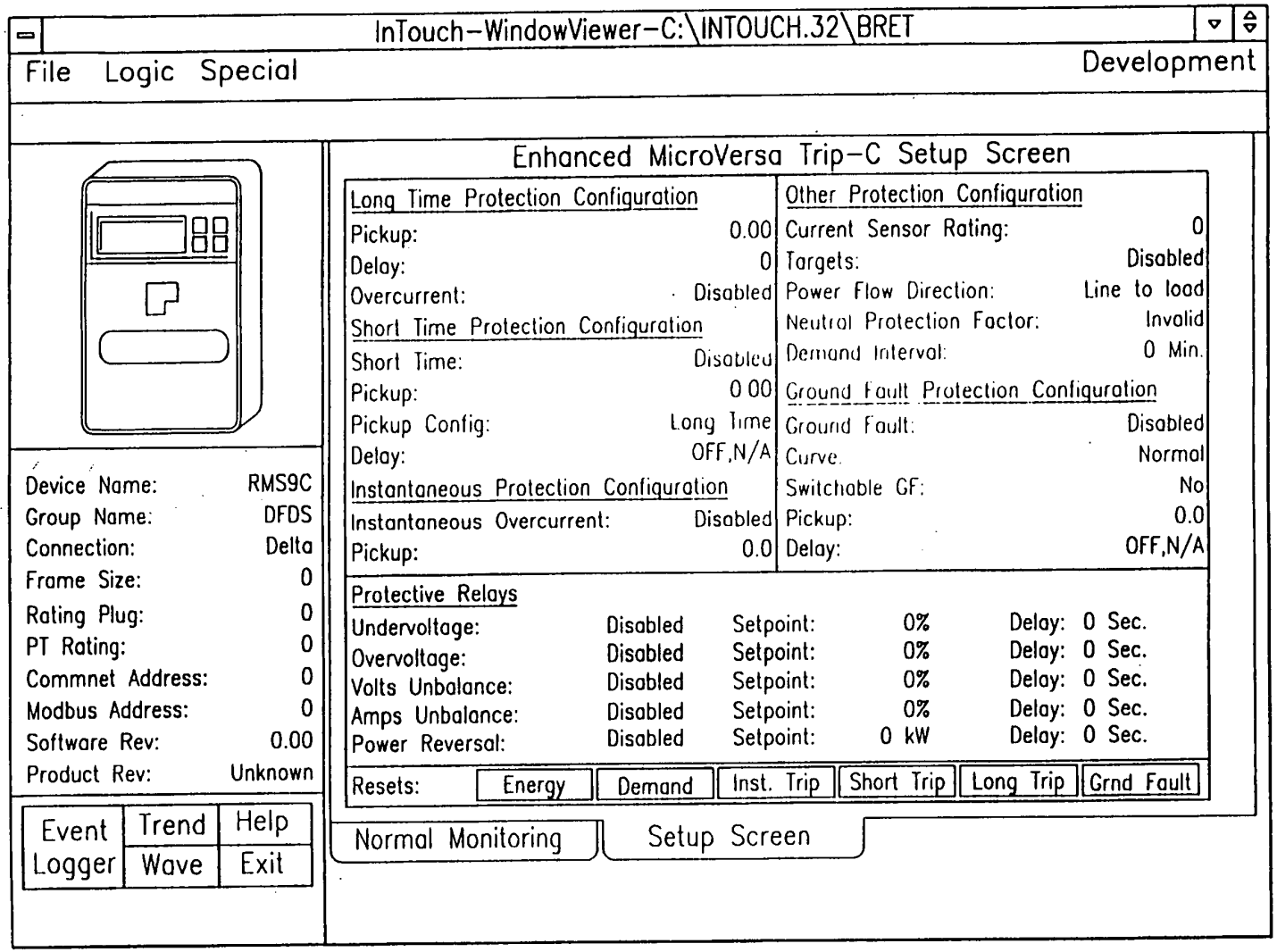

InTouch-WindowViewer-C:\INTOUCH.32\BRET
File Logic Special
Development
Enhanced MicroVersa Trip-C Setup Screen
Long Time Protection Configuration
Pickup: 0.00
Delay: 0
Overcurrent: Disabled
Short Time Protection Configuration
Short Time: Disabled
Pickup: 0.00
Pickup Config: Long Time
Delay: OFF,N/A
Instantaneous Protection Configuration
Instantaneous Overcurrent: Disabled
Pickup: 0.0
Other Protection Configuration
Current Sensor Rating: 0
Targets: Disabled
Power Flow Direction: Line to load
Neutral Protection Factor: Invalid
Demand Interval: 0 Min.
Ground Fault Protection Configuration
Ground Fault: Disabled
Curve: Normal
Switchable GF: No
Pickup: 0.0
Delay: OFF,N/A
Protective Relays
Undervoltage: Disabled Setpoint: 0% Delay: 0 Sec.
Overvoltage: Disabled Setpoint: 0% Delay: 0 Sec.
Volts Unbalance: Disabled Setpoint: 0% Delay: 0 Sec.
Amps Unbalance: Disabled Setpoint: 0% Delay: 0 Sec.
Power Reversal: Disabled Setpoint: 0 kW Delay: 0 Sec.
Resets: Energy Demand Inst. Trip Short Trip Long Trip Grnd Fault
Device Name: RMS9C
Group Name: DFDS
Connection: Delta
Frame Size: 0
Rating Plug: 0
PT Rating: 0
Commnet Address: 0
Modbus Address: 0
Software Rev: 0.00
Product Rev: Unknown
Event Logger
Trend
Wave
Help
Exit
Normal Monitoring
Setup Screen

FIG. 23

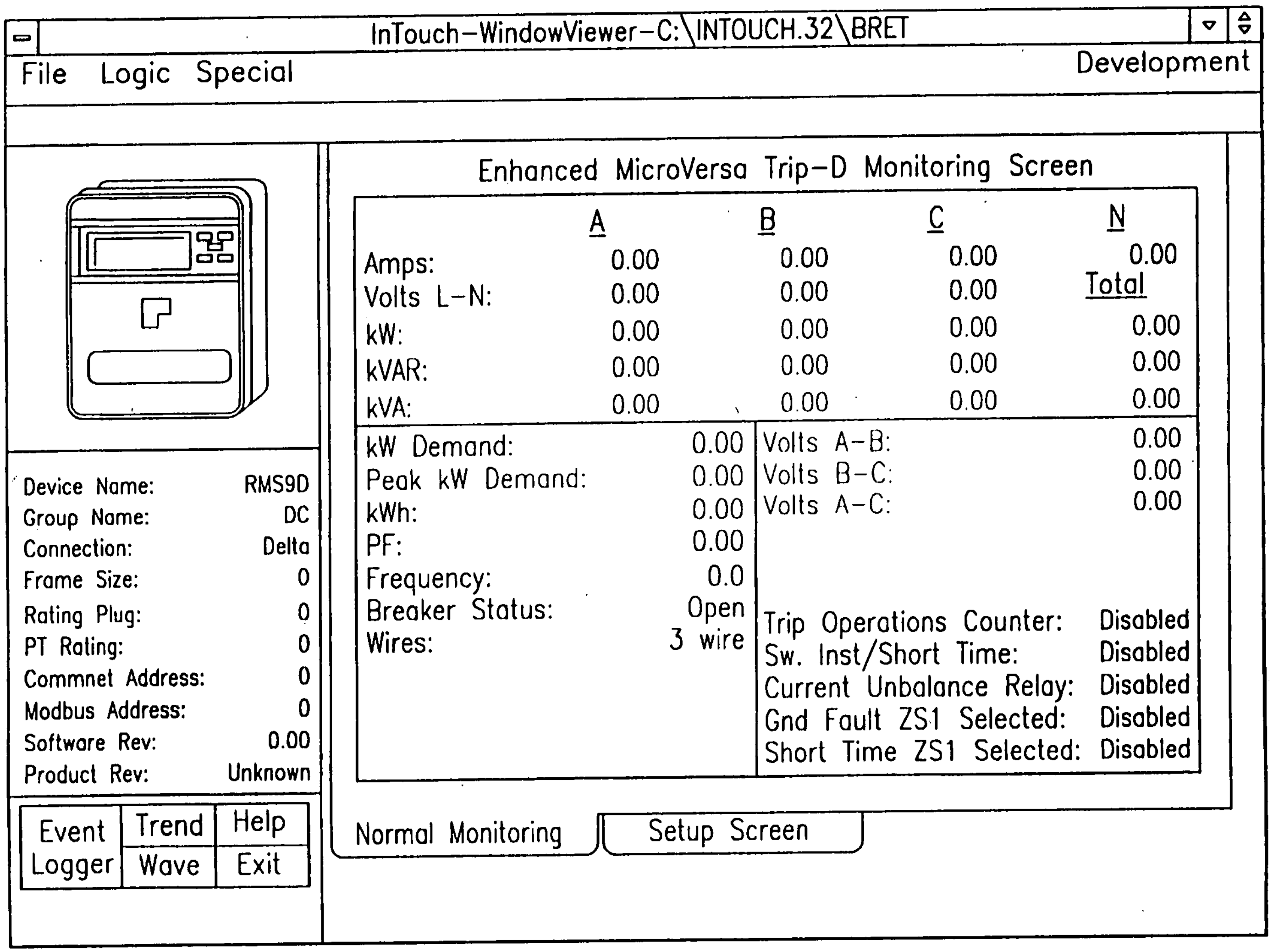

InTouch–WindowViewer–C:\INTOUCH.32\BRET
File
Logic
Special
Development
Enhanced MicroVersa Trip–D Monitoring Screen
A
B
C
N
Total
Amps: 0.00 0.00 0.00 0.00
Volts L–N: 0.00 0.00 0.00
kW: 0.00 0.00 0.00 0.00
kVAR: 0.00 0.00 0.00 0.00
kVA: 0.00 0.00 0.00 0.00
kW Demand: 0.00
Peak kW Demand: 0.00
kWh: 0.00
PF: 0.00
Frequency: 0.0
Breaker Status: Open
Wires: 3 wire
Volts A–B: 0.00
Volts B–C: 0.00
Volts A–C: 0.00
Trip Operations Counter: Disabled
Sw. Inst/Short Time: Disabled
Current Unbalance Relay: Disabled
Gnd Fault ZS1 Selected: Disabled
Short Time ZS1 Selected: Disabled
Normal Monitoring
Setup Screen
Device Name: RMS9D
Group Name: DC
Connection: Delta
Frame Size: 0
Rating Plug: 0
PT Rating: 0
Commnet Address: 0
Modbus Address: 0
Software Rev: 0.00
Product Rev: Unknown
Event Logger
Trend
Help
Wave
Exit

FIG. 24

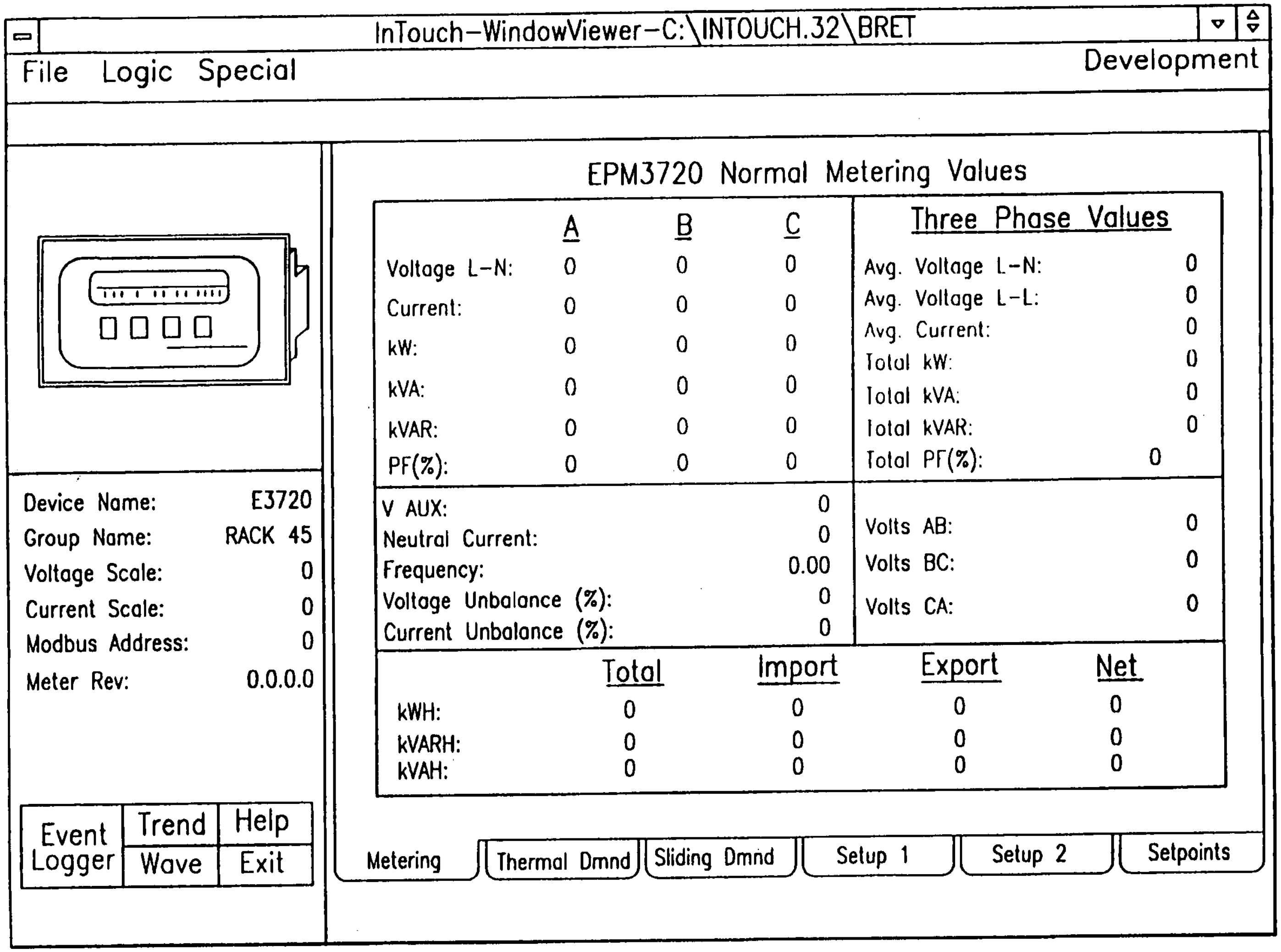

InTouch–WindowViewer–C:\INTOUCH.32\BRET
File Logic Special
Development
EPM3720 Normal Metering Values
A B C
Voltage L–N: 0 0 0
Current: 0 0 0
kW: 0 0 0
kVA: 0 0 0
kVAR: 0 0 0
PF(%): 0 0 0
Three Phase Values
Avg. Voltage L–N: 0
Avg. Voltage L–L: 0
Avg. Current: 0
Total kW: 0
Total kVA: 0
Total kVAR: 0
Total PF(%): 0
V AUX: 0
Neutral Current: 0
Frequency: 0.00
Voltage Unbalance (%): 0
Current Unbalance (%): 0
Volts AB: 0
Volts BC: 0
Volts CA: 0
Total Import Export Net
kWH: 0 0 0 0
kVARH: 0 0 0 0
kVAH: 0 0 0 0
Device Name: E3720
Group Name: RACK 45
Voltage Scale: 0
Current Scale: 0
Modbus Address: 0
Meter Rev: 0.0.0.0
Event Logger
Trend
Help
Wave
Exit
Metering
Thermal Dmnd
Sliding Dmnd
Setup 1
Setup 2
Setpoints

FIG. 25

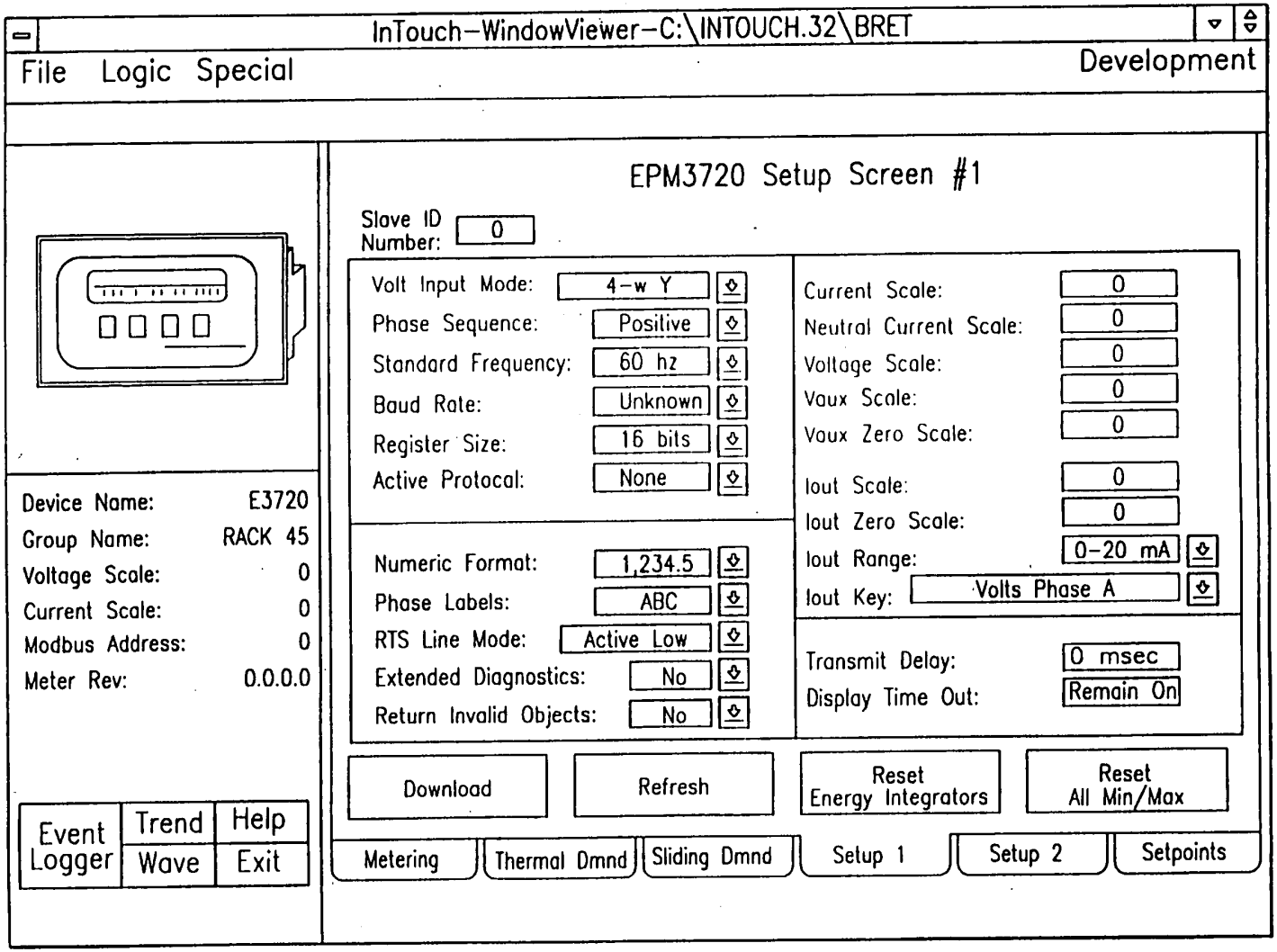

InTouch–WindowViewer–C:\INTOUCH.32\BRET
File Logic Special
Development
EPM3720 Setup Screen #1
Slave ID Number: 0
Volt Input Mode: 4–w Y
Phase Sequence: Positive
Standard Frequency: 60 hz
Baud Rate: Unknown
Register Size: 16 bits
Active Protocal: None
Numeric Format: 1,234.5
Phase Labels: ABC
RTS Line Mode: Active Low
Extended Diagnostics: No
Return Invalid Objects: No
Current Scale: 0
Neutral Current Scale: 0
Voltage Scale: 0
Vaux Scale: 0
Vaux Zero Scale: 0
Iout Scale: 0
Iout Zero Scale: 0
Iout Range: 0–20 mA
Iout Key: Volts Phase A
Transmit Delay: 0 msec
Display Time Out: Remain On
Device Name: E3720
Group Name: RACK 45
Voltage Scale: 0
Current Scale: 0
Modbus Address: 0
Meter Rev: 0.0.0.0
Download
Refresh
Reset Energy Integrators
Reset All Min/Max
Event Logger
Trend
Wave
Help
Exit
Metering
Thermal Dmnd
Sliding Dmnd
Setup 1
Setup 2
Setpoints

FIG. 26

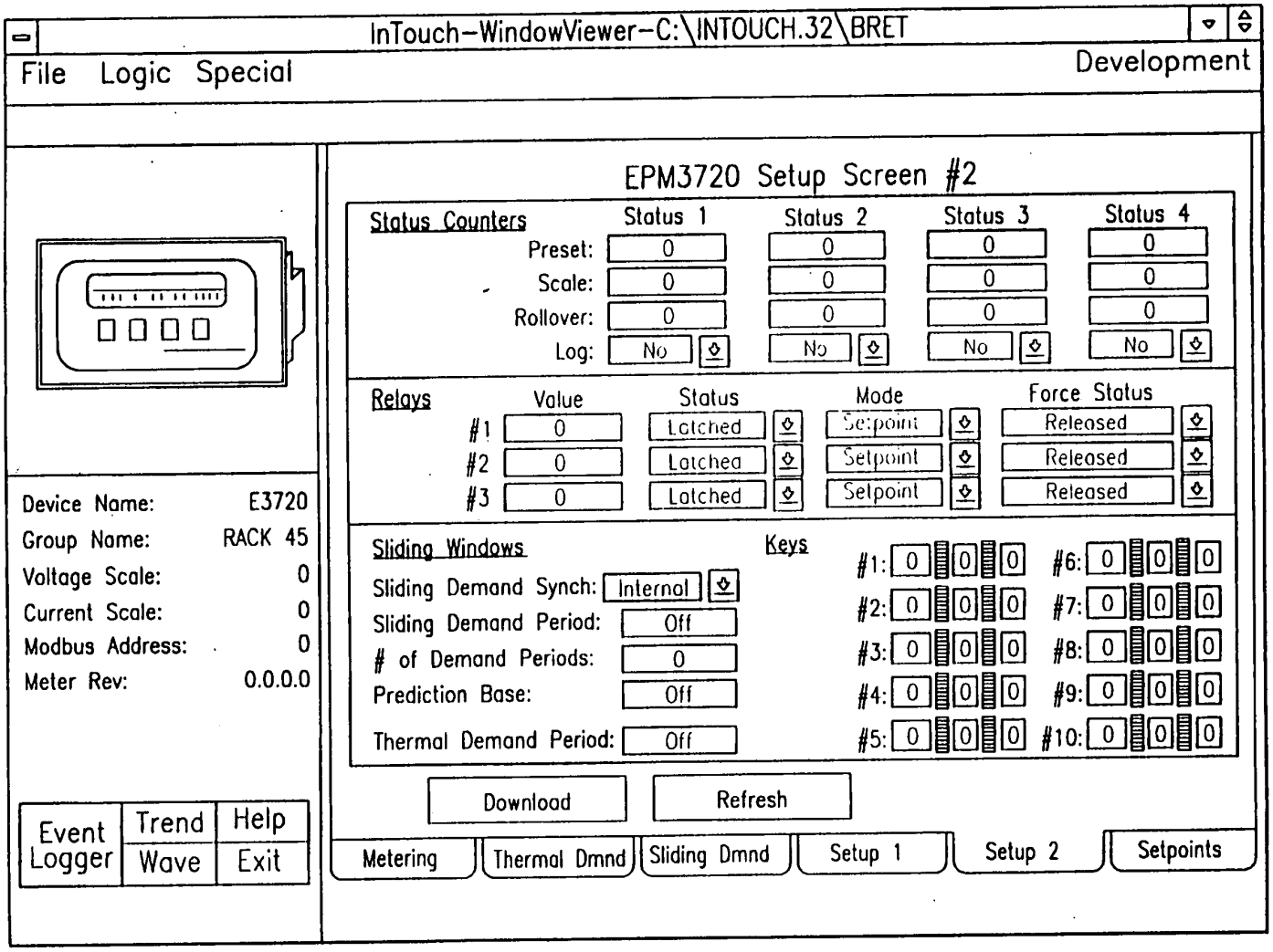


FIG. 27

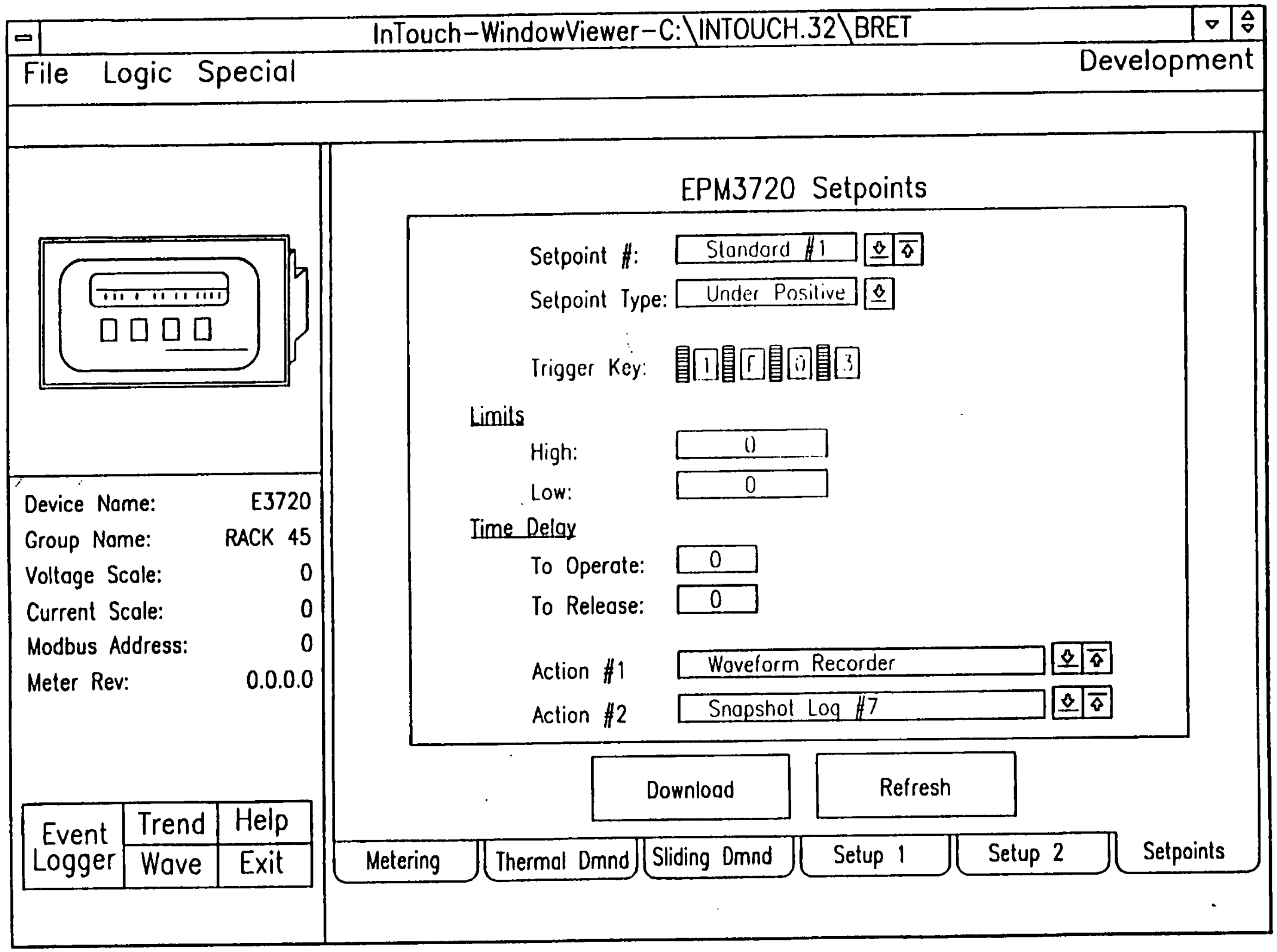

InTouch–WindowViewer–C:\INTOUCH.32\BRET
File Logic Special
Development
EPM3720 Setpoints
Setpoint #:
Standard #1
Setpoint Type:
Under Positive
Trigger Key:
1 r 0 3
Limits
High:
0
Low:
0
Time Delay
To Operate:
0
To Release:
0
Action #1
Waveform Recorder
Action #2
Snapshot Log #7
Download
Refresh
Metering
Thermal Dmnd
Sliding Dmnd
Setup 1
Setup 2
Setpoints
Device Name: E3720
Group Name: RACK 45
Voltage Scale: 0
Current Scale: 0
Modbus Address: 0
Meter Rev: 0.0.0.0
Event Logger
Trend
Help
Wave
Exit

FIG. 28

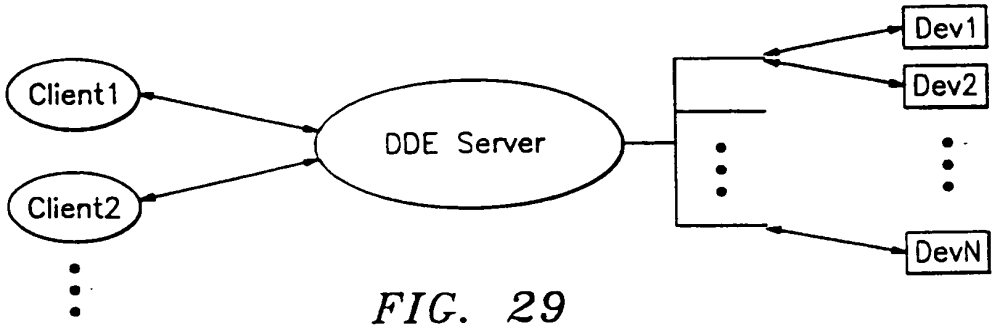
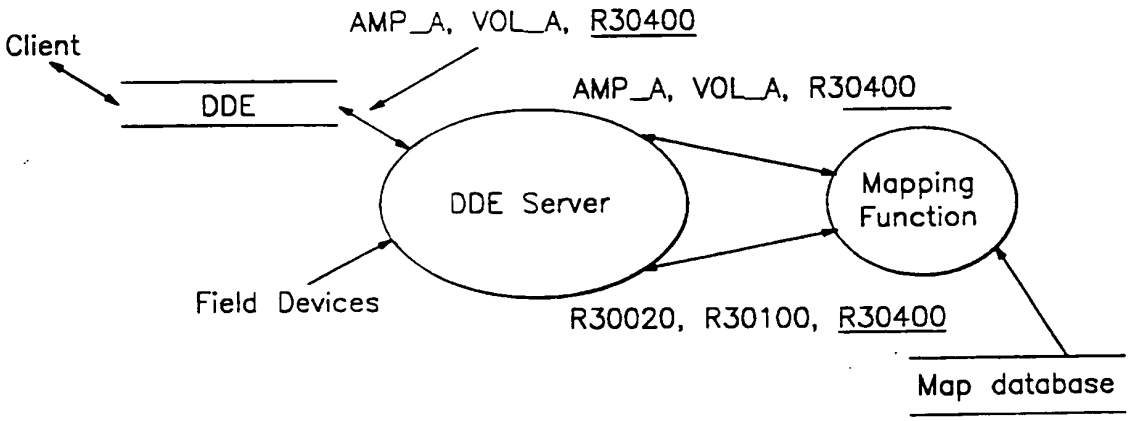


FIG. 29



Register Mapping Scheme

AMP_A => Current of phase A for a meter identified by DDE topic, Register address R30020

VOL_A => Voltage of phase A for a meter identified by DDE topic, Register address R30100

R30400 => An item addressed directly with register address. No conversion required.

FIG. 30

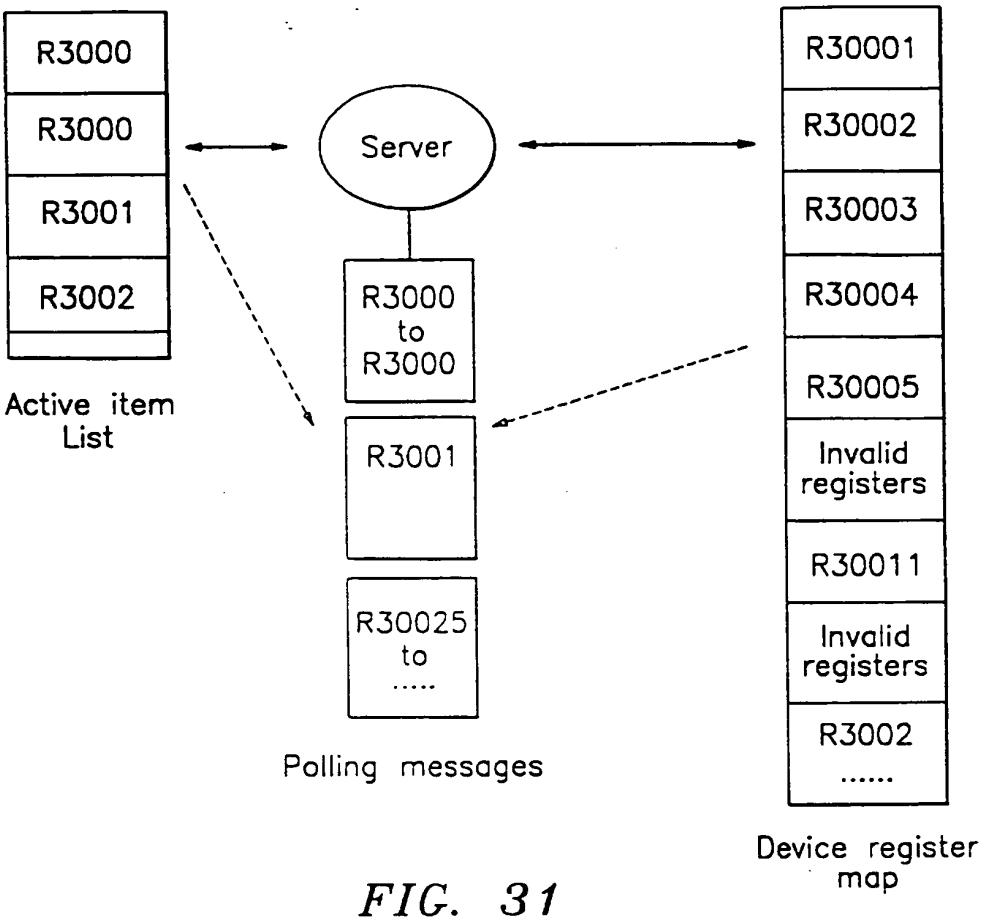


FIG. 31

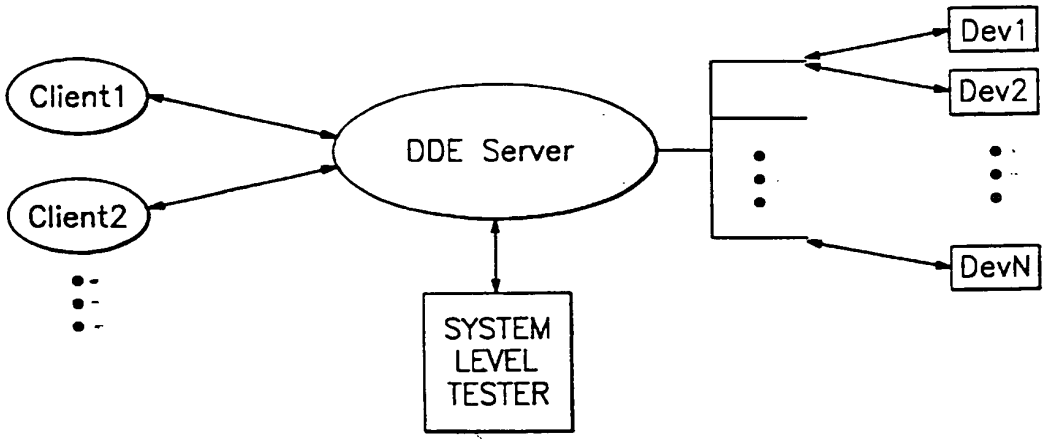


FIG. 31A

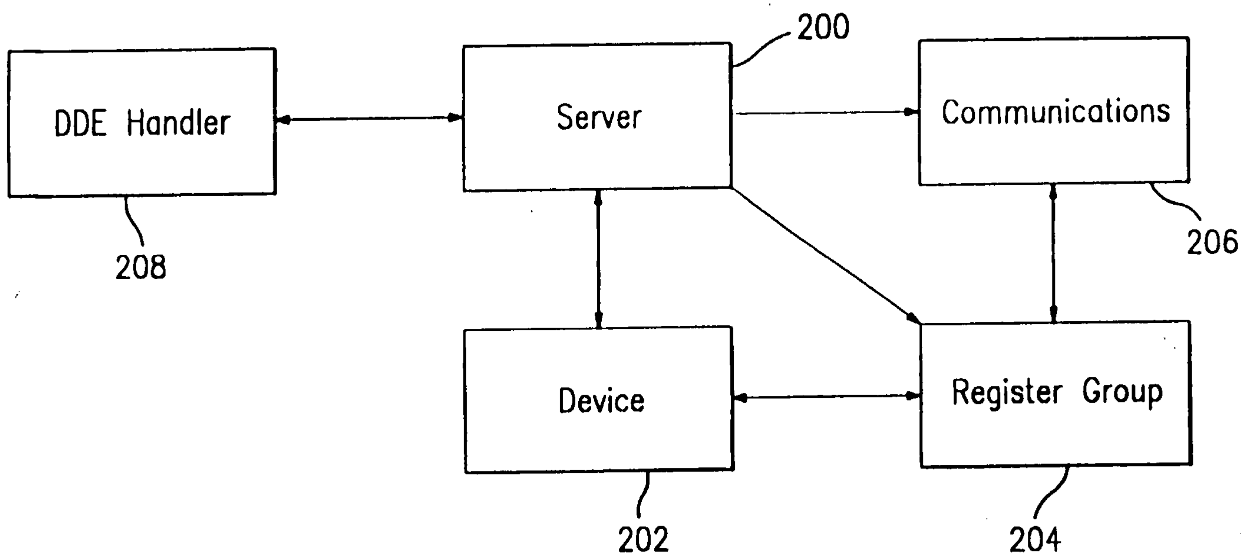

DDE Handler
208
Server
200
Communications
206
Device
202
Register Group
204

FIG. 32

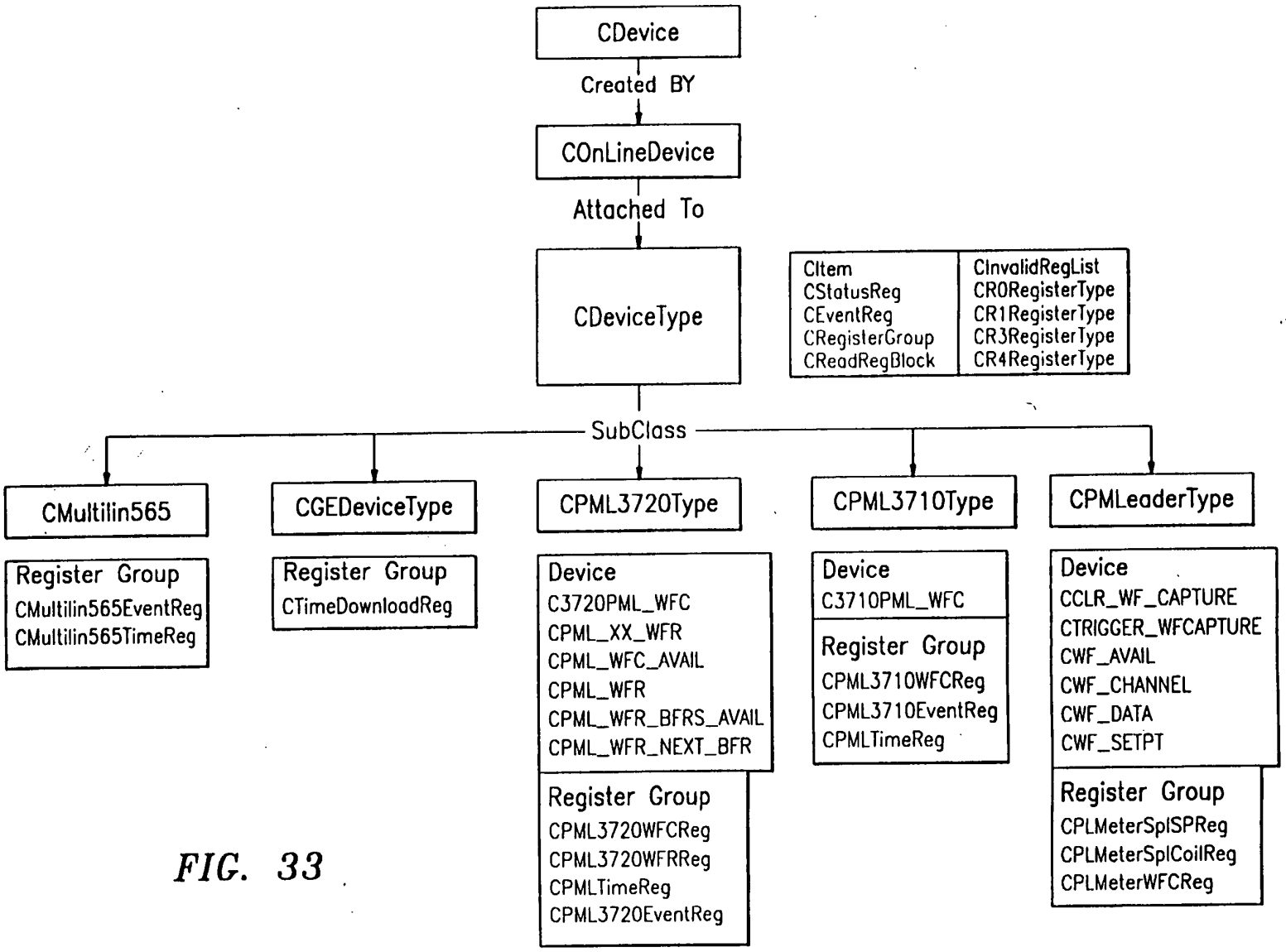


FIG. 33

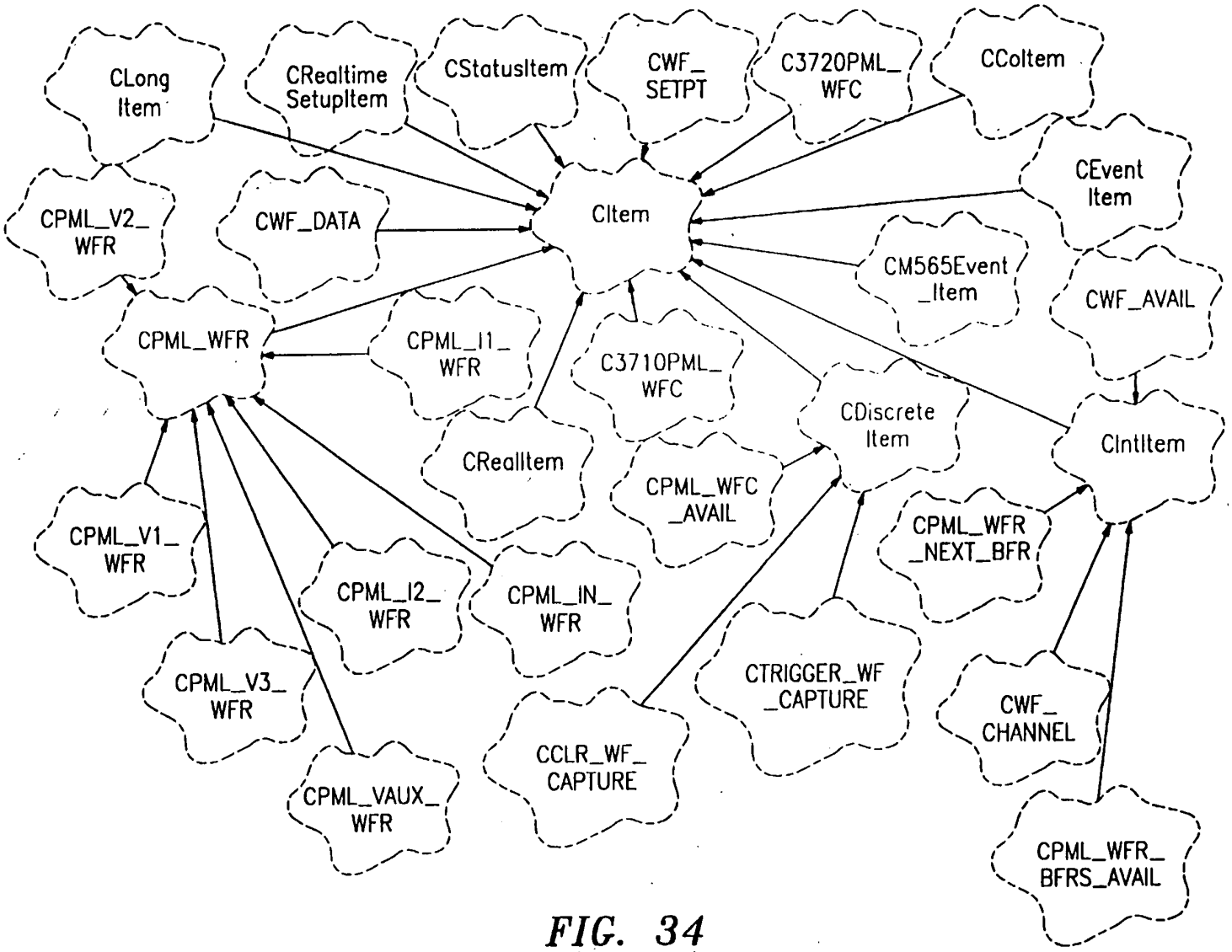

CLong Item
CRealtime SetupItem
CStatusItem
CWF_ SETPT
C3720PML_ WFC
CColItem
CEvent Item
CPML_V2_ WFR
CWF_DATA
CItem
CM565Event _Item
CWF_AVAIL
CPML_WFR
CPML_I1_ WFR
C3710PML_ WFC
CDiscrete Item
CIntItem
CRealItem
CPML_WFC _AVAIL
CPML_V1_ WFR
CPML_I2_ WFR
CPML_IN_ WFR
CPML_WFR _NEXT_BFR
CPML_V3_ WFR
CTRIGGER_WF _CAPTURE
CWF_ CHANNEL
CCLR_WF_ CAPTURE
CPML_VAUX_ WFR
CPML_WFR_ BFRS_AVAIL

FIG. 34

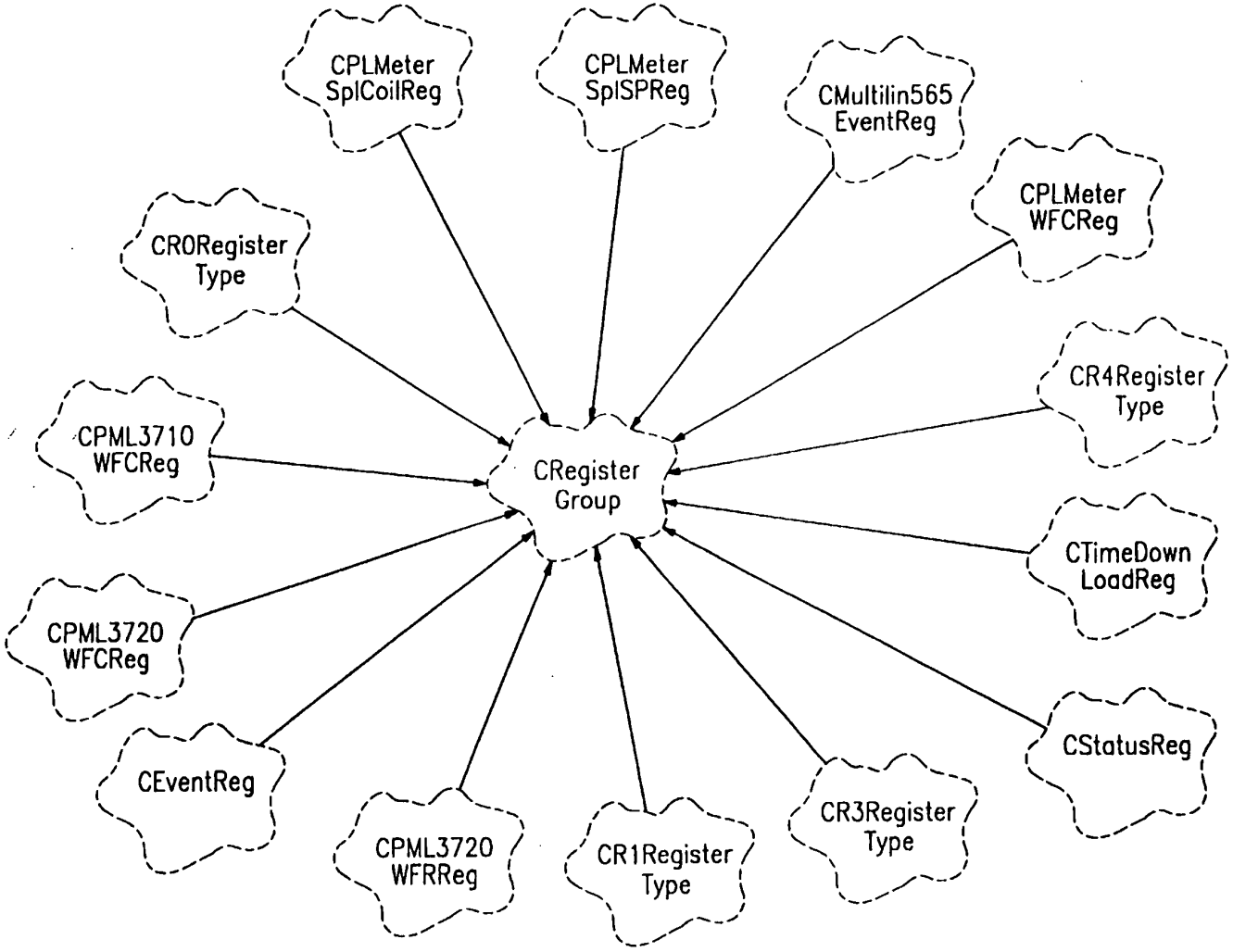


FIG. 35

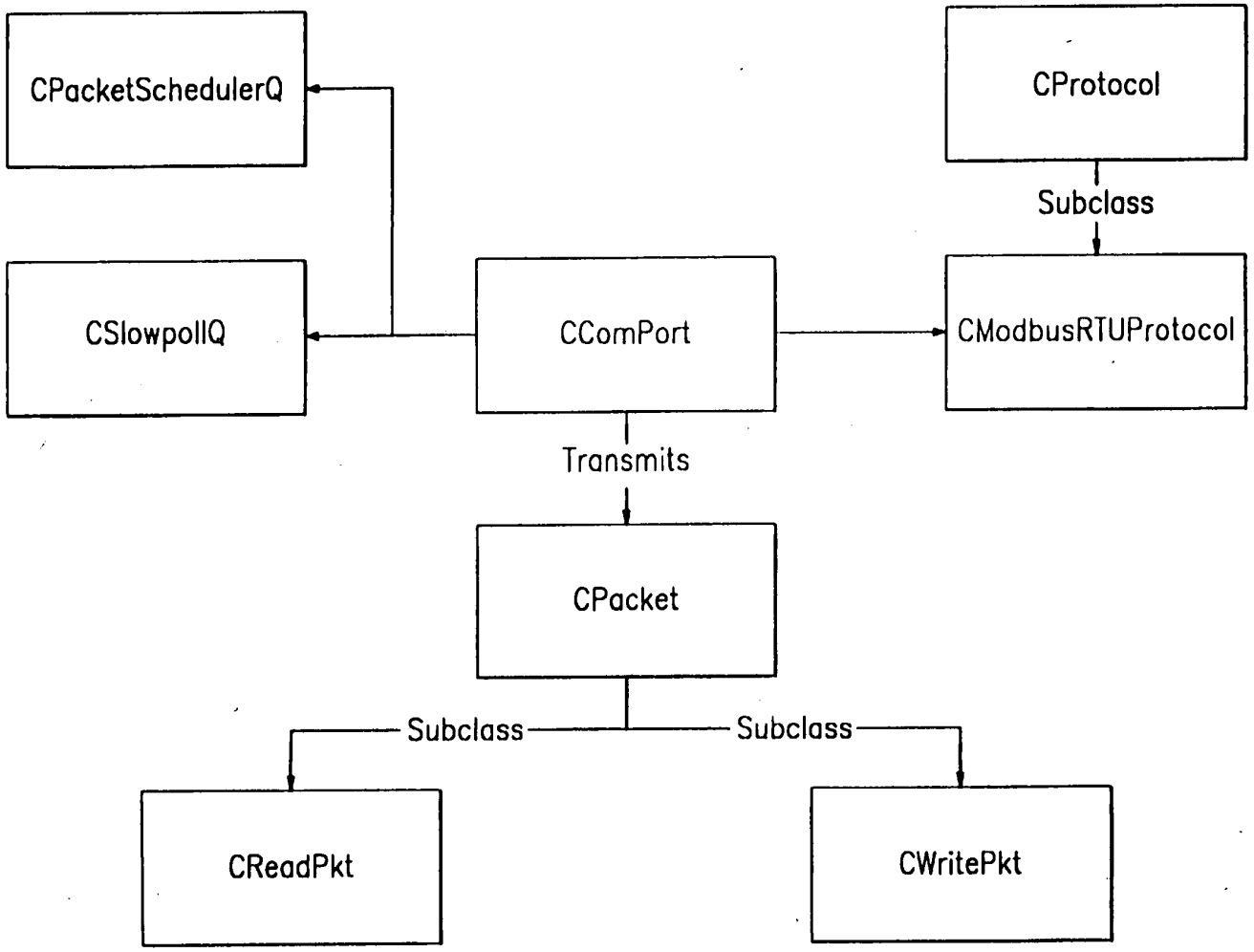


FIG. 36

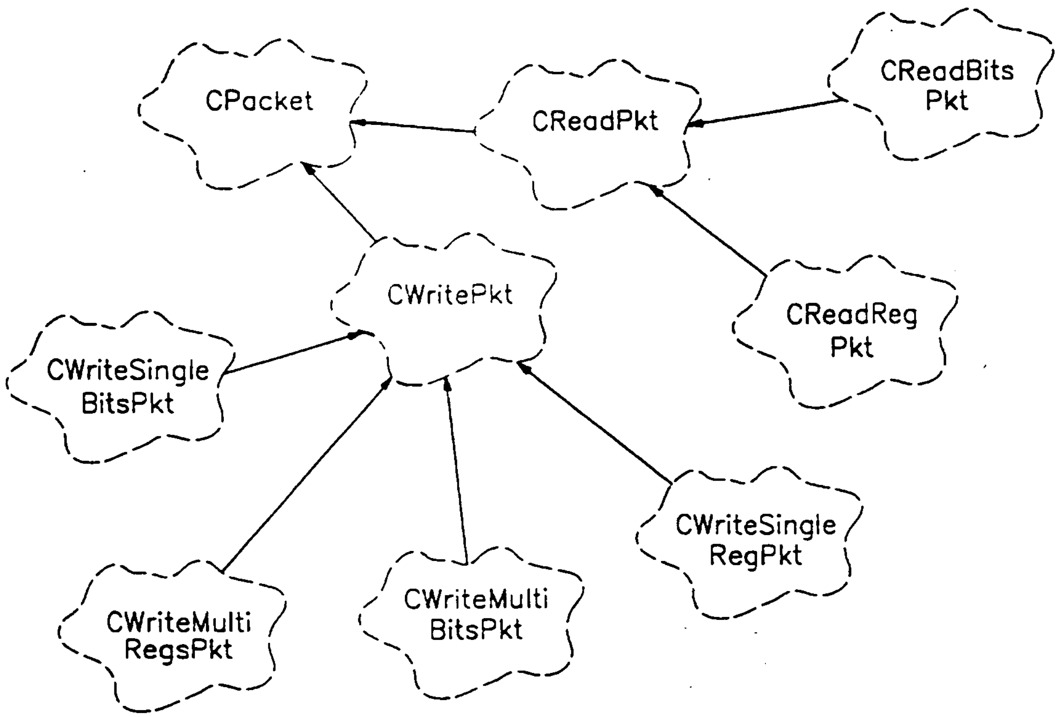

CPacket
CReadPkt
CReadBits
Pkt
CWritePkt
CReadReg
Pkt
CWriteSingle
BitsPkt
CWriteSingle
RegPkt
CWriteMulti
RegsPkt
CWriteMulti
BitsPkt

FIG. 37

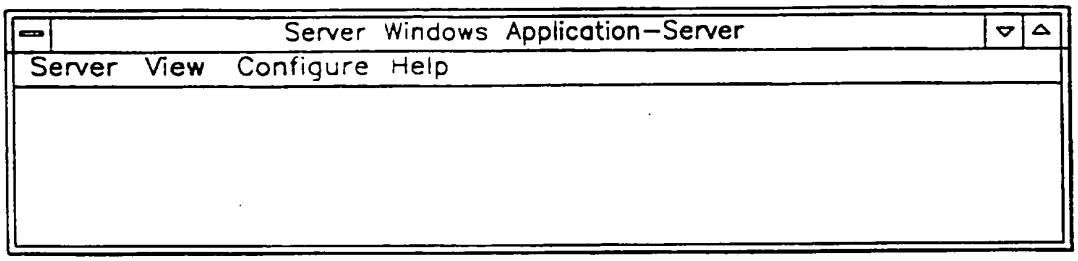

Server Windows Application–Server
Server View Configure Help

FIG. 38

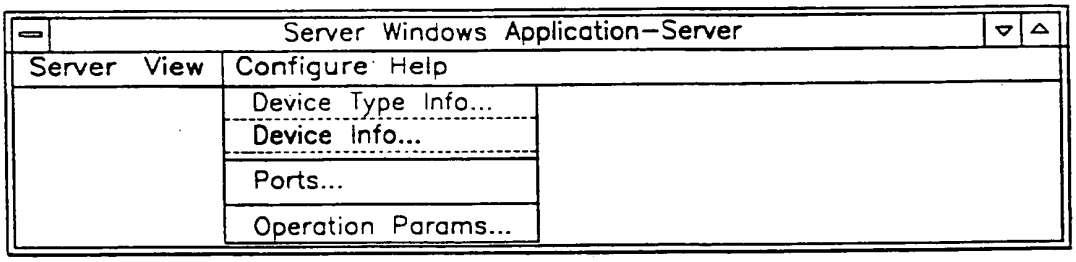

Server Windows Application–Server
Server View
Configure Help
Device Type Info...
Device Info...
Ports...
Operation Params...

FIG. 39

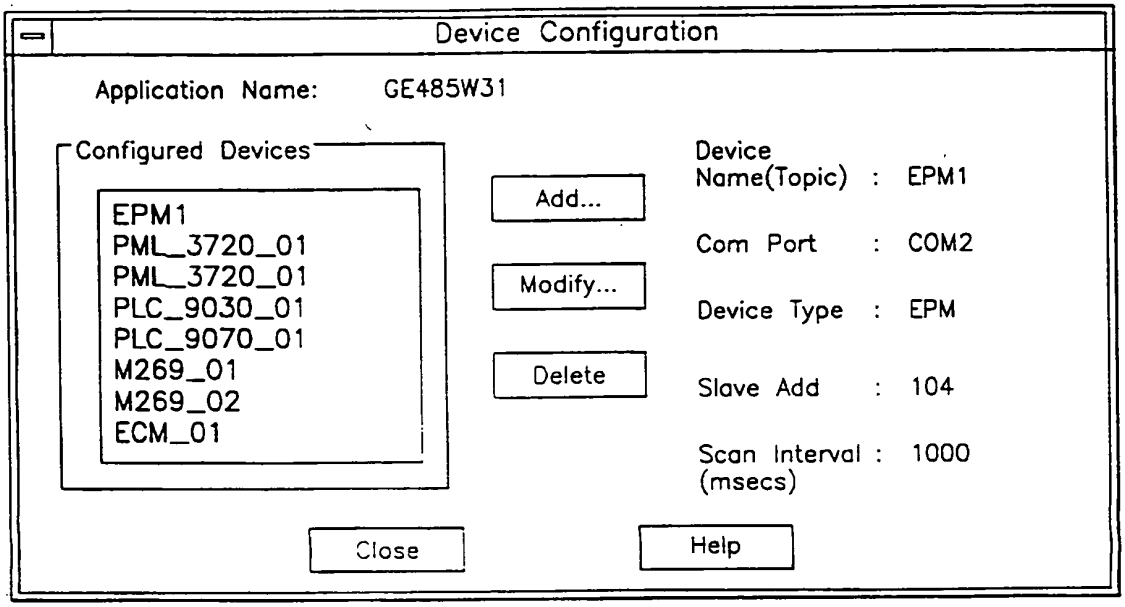

Device Configuration
Application Name: GE485W31
Configured Devices
EPM1
PML_3720_01
PML_3720_01
PLC_9030_01
PLC_9070_01
M269_01
M269_02
ECM_01
Add...
Modify...
Delete
Device Name(Topic) : EPM1
Com Port : COM2
Device Type : EPM
Slave Add : 104
Scan Interval : 1000 (msecs)
Close
Help

FIG. 40

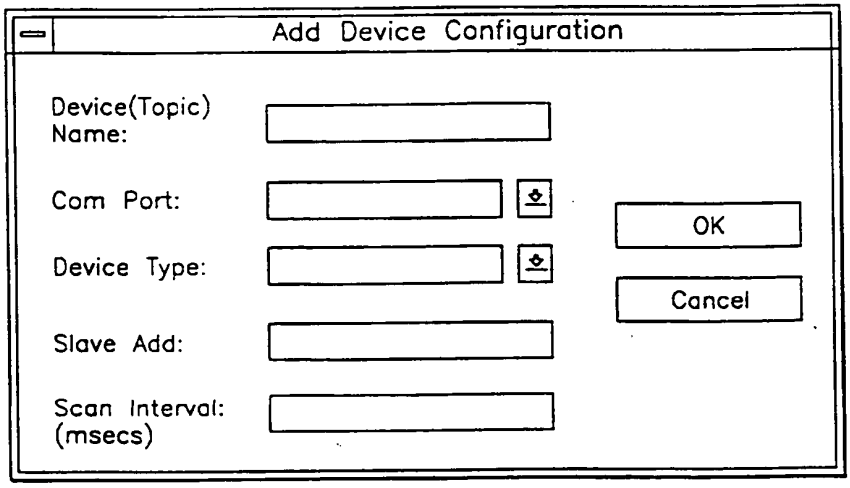

Add Device Configuration
Device(Topic) Name:
Com Port:
Device Type:
Slave Add:
Scan Interval: (msecs)
OK
Cancel

FIG. 41

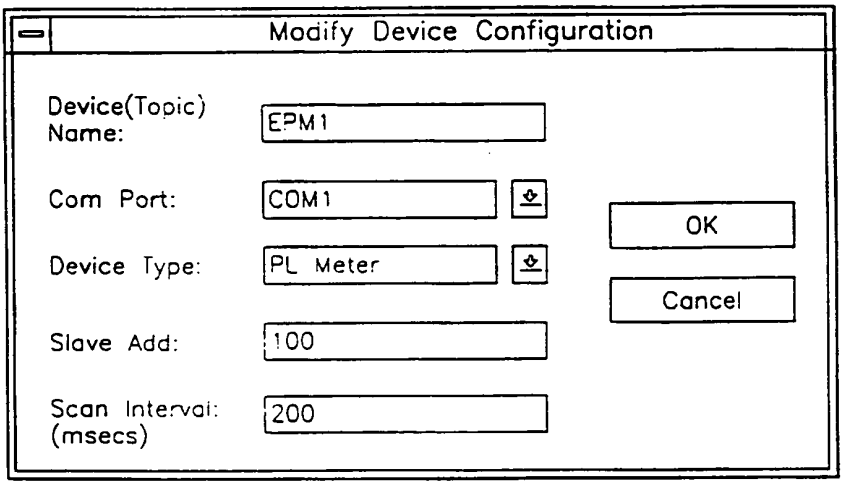

Modify Device Configuration
Device(Topic) Name:
EPM1
Com Port:
COM1
Device Type:
PL Meter
Slave Add:
100
Scan Interval: (msecs)
200
OK
Cancel

FIG. 42

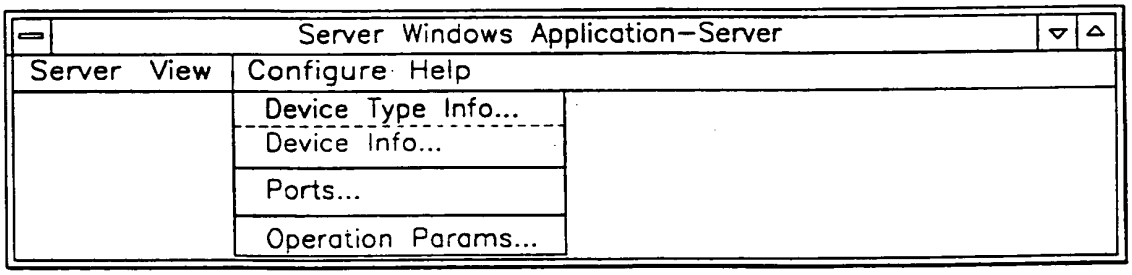

Server Windows Application–Server
Server View
Configure Help
Device Type Info...
Device Info...
Ports...
Operation Params...

FIG. 43

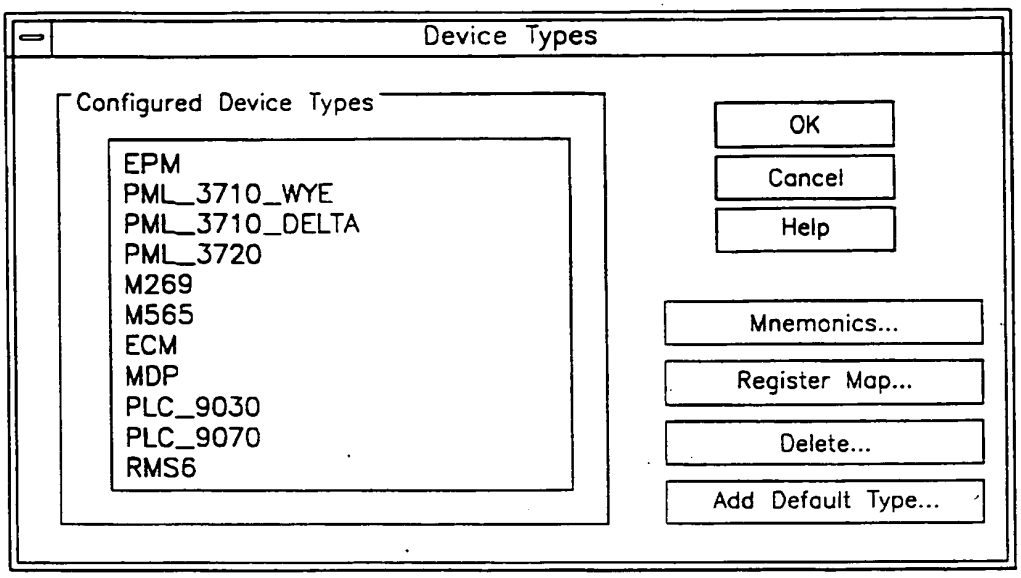

Device Types
Configured Device Types
EPM
PML_3710_WYE
PML_3710_DELTA
PML_3720
M269
M565
ECM
MDP
PLC_9030
PLC_9070
RMS6
OK
Cancel
Help
Mnemonics...
Register Map...
Delete...
Add Default Type...

FIG. 44

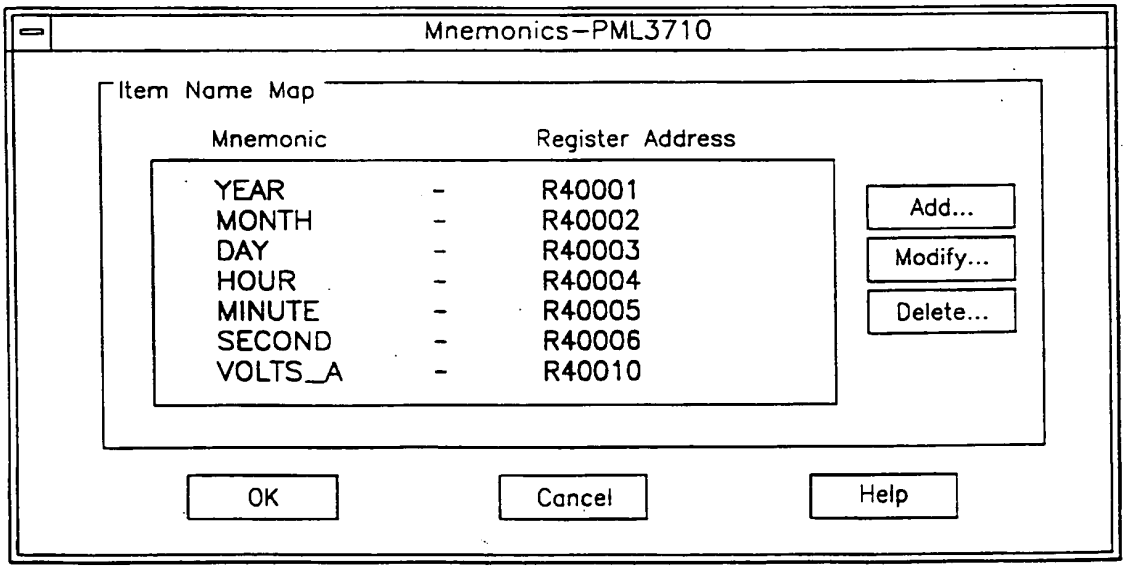

Mnemonics–PML3710
Item Name Map
Mnemonic
Register Address
YEAR - R40001
MONTH - R40002
DAY - R40003
HOUR - R40004
MINUTE - R40005
SECOND - R40006
VOLTS_A - R40010
Add...
Modify...
Delete...
OK
Cancel
Help

FIG. 45

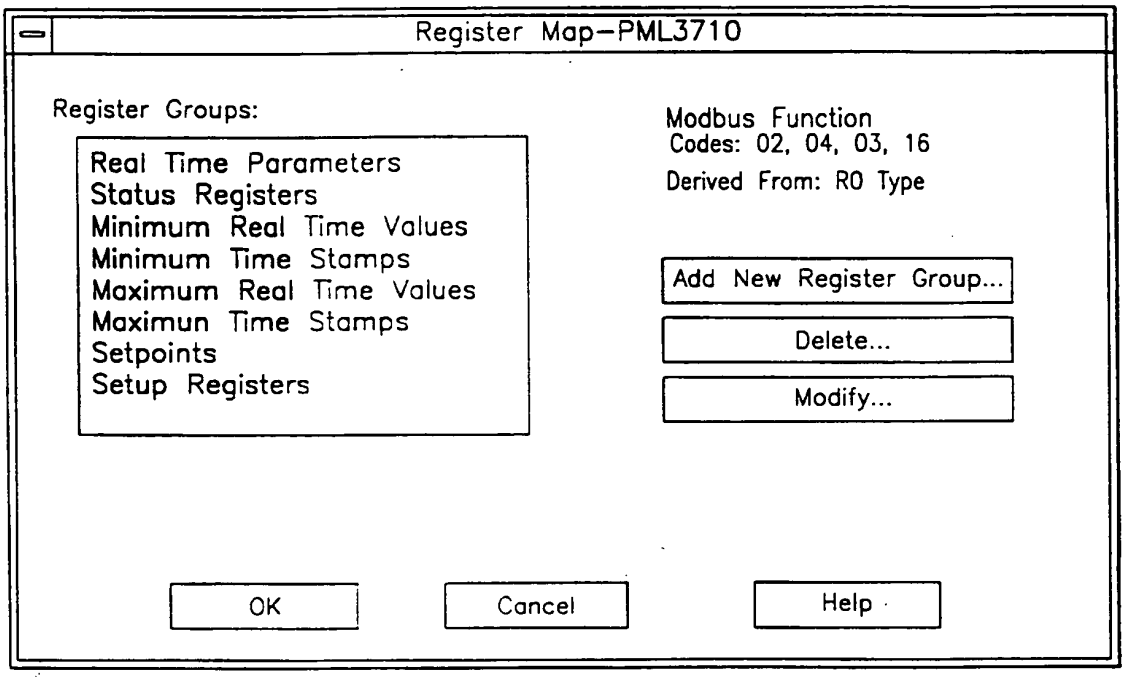

Register Map–PML3710
Register Groups:
Real Time Parameters
Status Registers
Minimum Real Time Values
Minimum Time Stamps
Maximum Real Time Values
Maximun Time Stamps
Setpoints
Setup Registers
Modbus Function
Codes: 02, 04, 03, 16
Derived From: R0 Type
Add New Register Group...
Delete...
Modify...
OK
Cancel
Help

FIG. 46

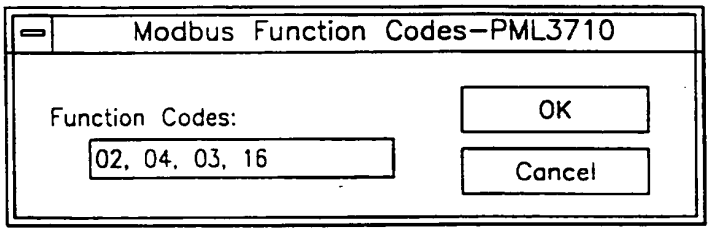

Modbus Function Codes–PML3710
Function Codes:
02, 04, 03, 16
OK
Cancel

FIG. 47

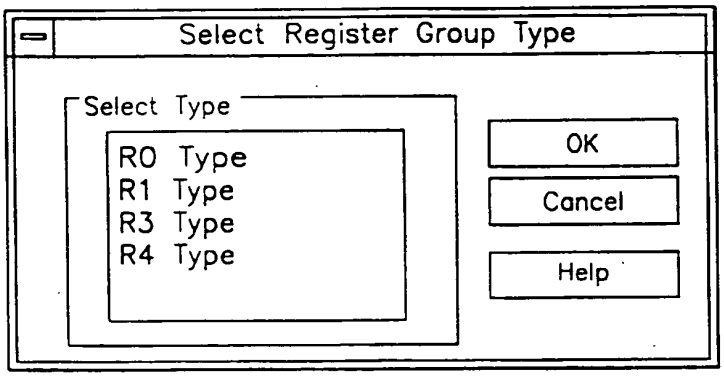

Select Register Group Type
Select Type
R0 Type
R1 Type
R3 Type
R4 Type
OK
Cancel
Help

FIG. 48

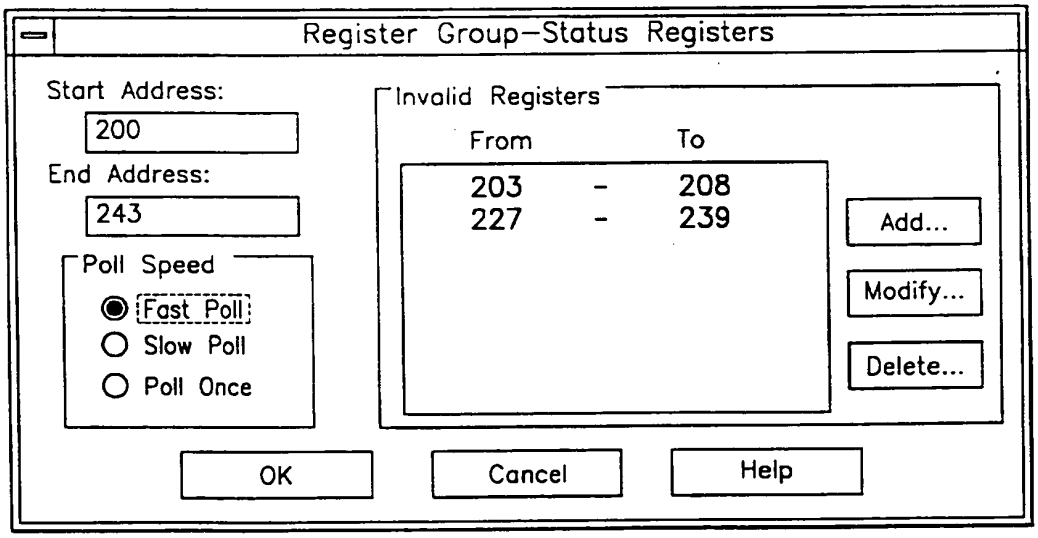

Register Group–Status Registers
Start Address:
200
End Address:
243
Poll Speed
Fast Poll
Slow Poll
Poll Once
Invalid Registers
From
To
203 - 208
227 - 239
Add...
Modify...
Delete...
OK
Cancel
Help

FIG. 49

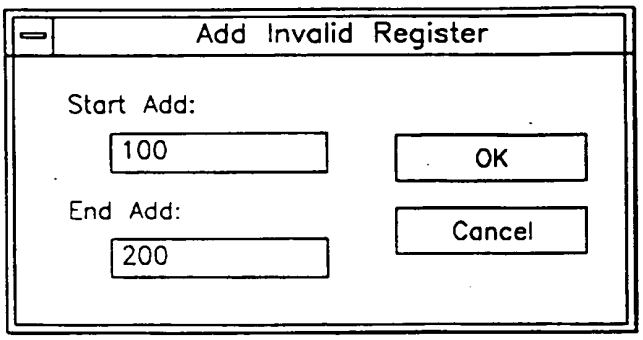


FIG. 50

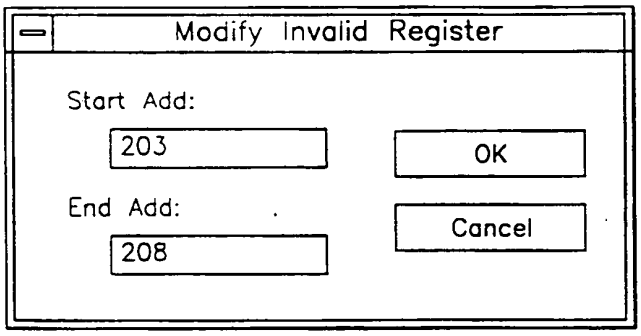


FIG. 51

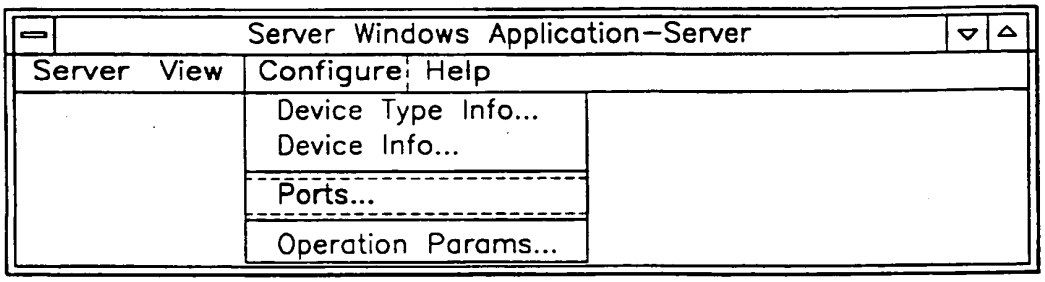


FIG. 52

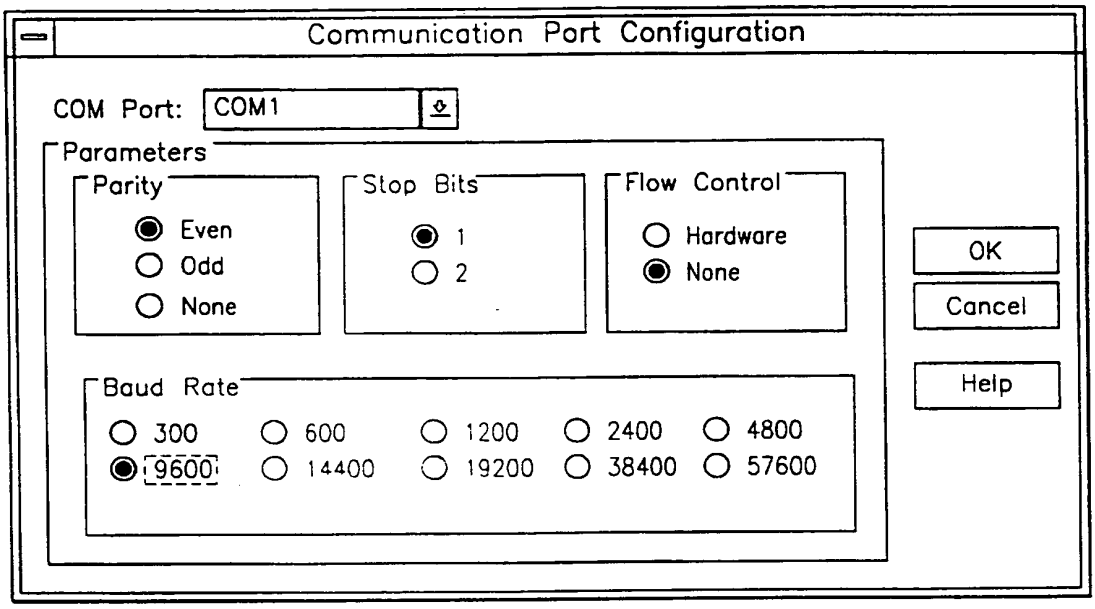

Communication Port Configuration
COM Port:
COM1
Parameters
Parity
Even
Odd
None
Stop Bits
1
2
Flow Control
Hardware
None
OK
Cancel
Help
Baud Rate
300
600
1200
2400
4800
9600
14400
19200
38400
57600

FIG. 53

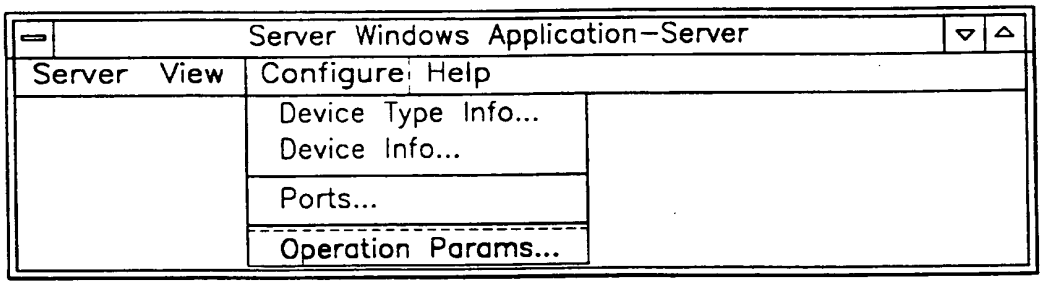

Server Windows Application-Server
Server
View
Configure
Help
Device Type Info...
Device Info...
Ports...
Operation Params...

FIG. 54

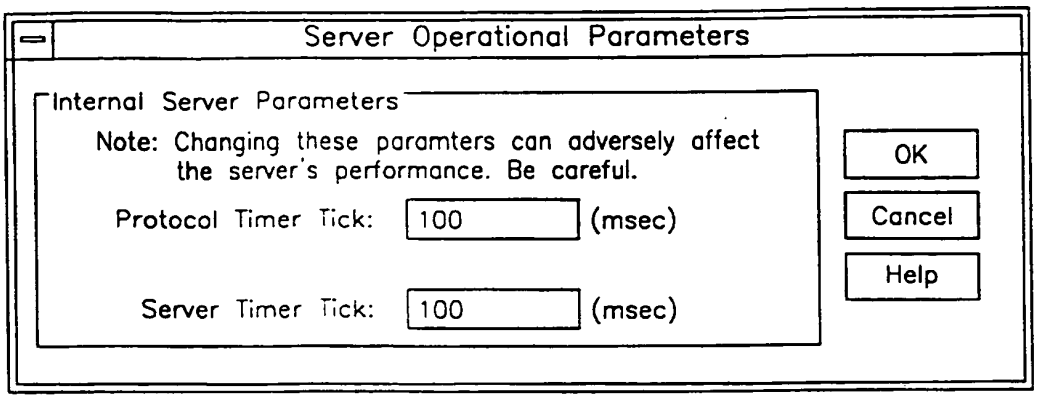


FIG. 55

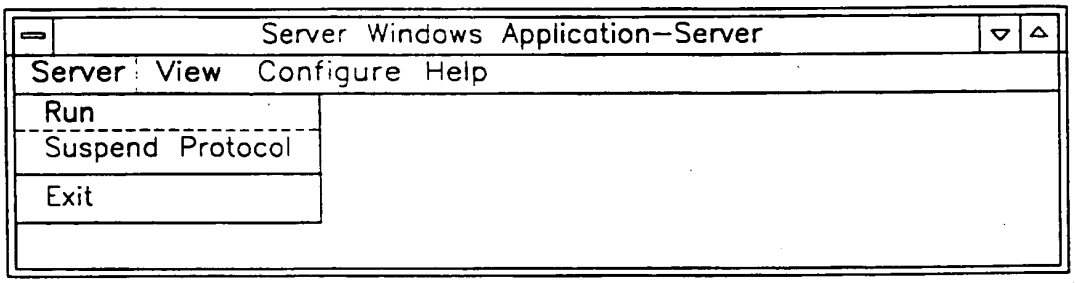


FIG. 56

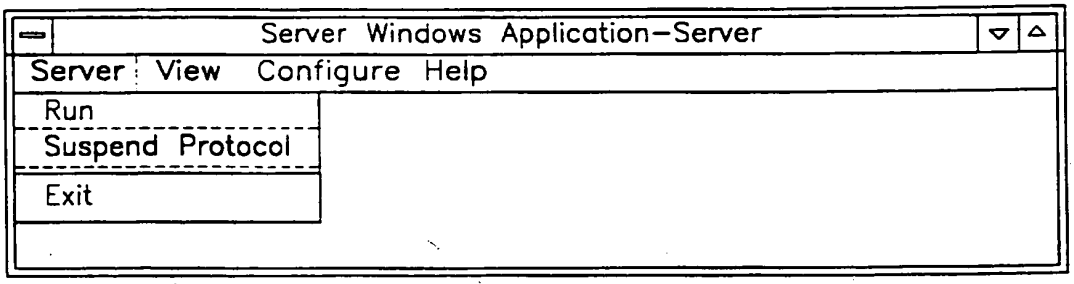


FIG. 57

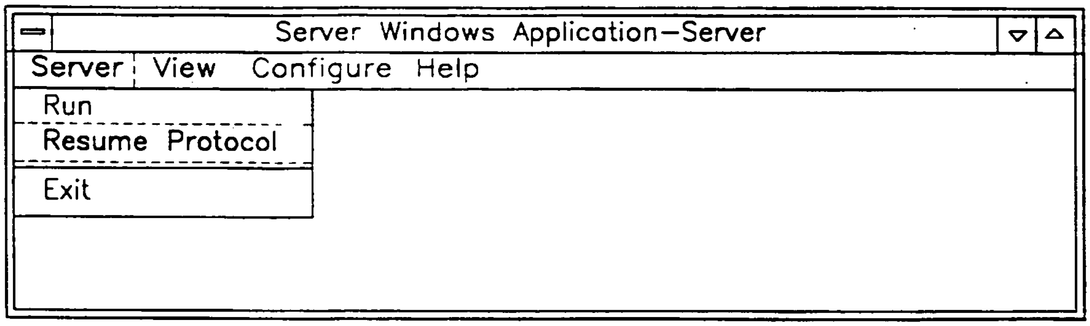

Server Windows Application–Server
Server
View
Configure
Help
Run
Resume Protocol
Exit

FIG. 58

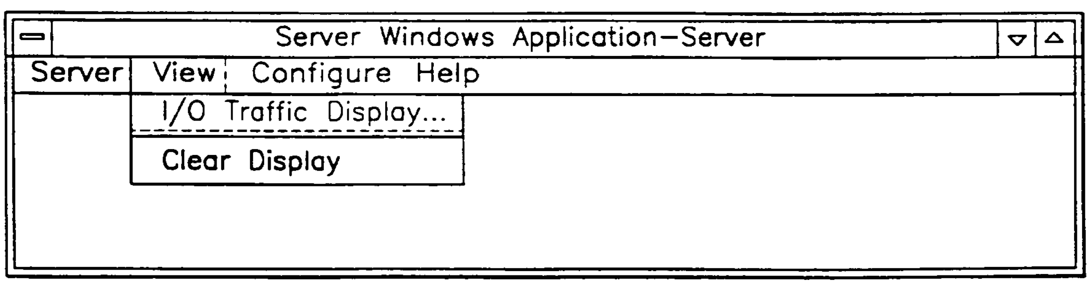

Server Windows Application–Server
Server
View
Configure
Help
I/O Traffic Display...
Clear Display

FIG. 59

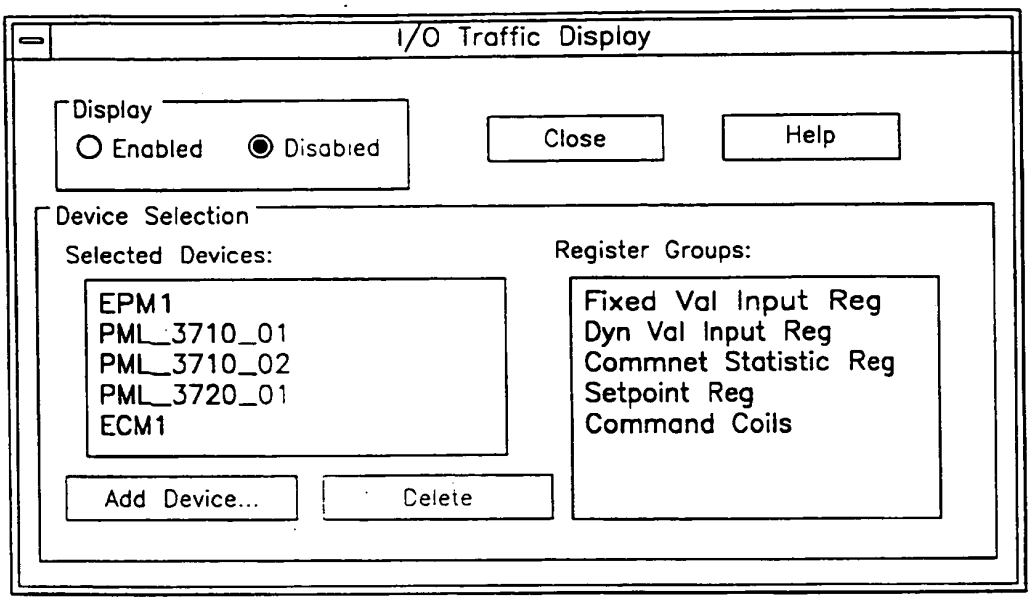


FIG. 60

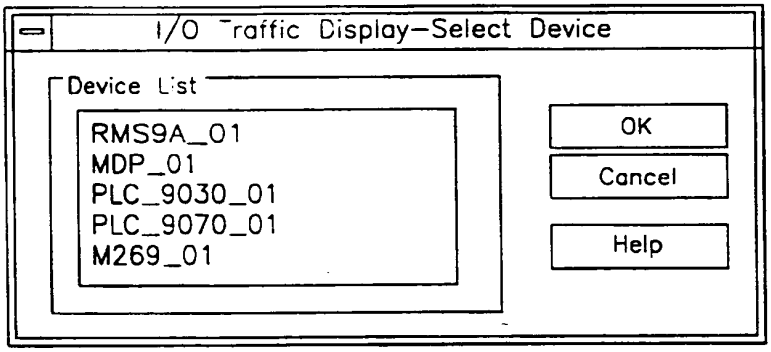


FIG. 61

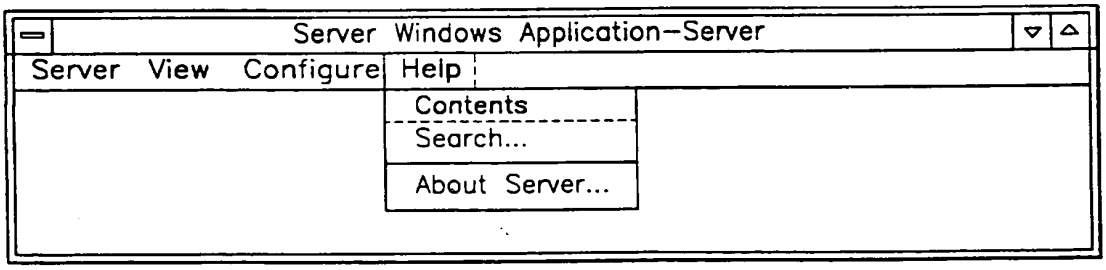


FIG. 62

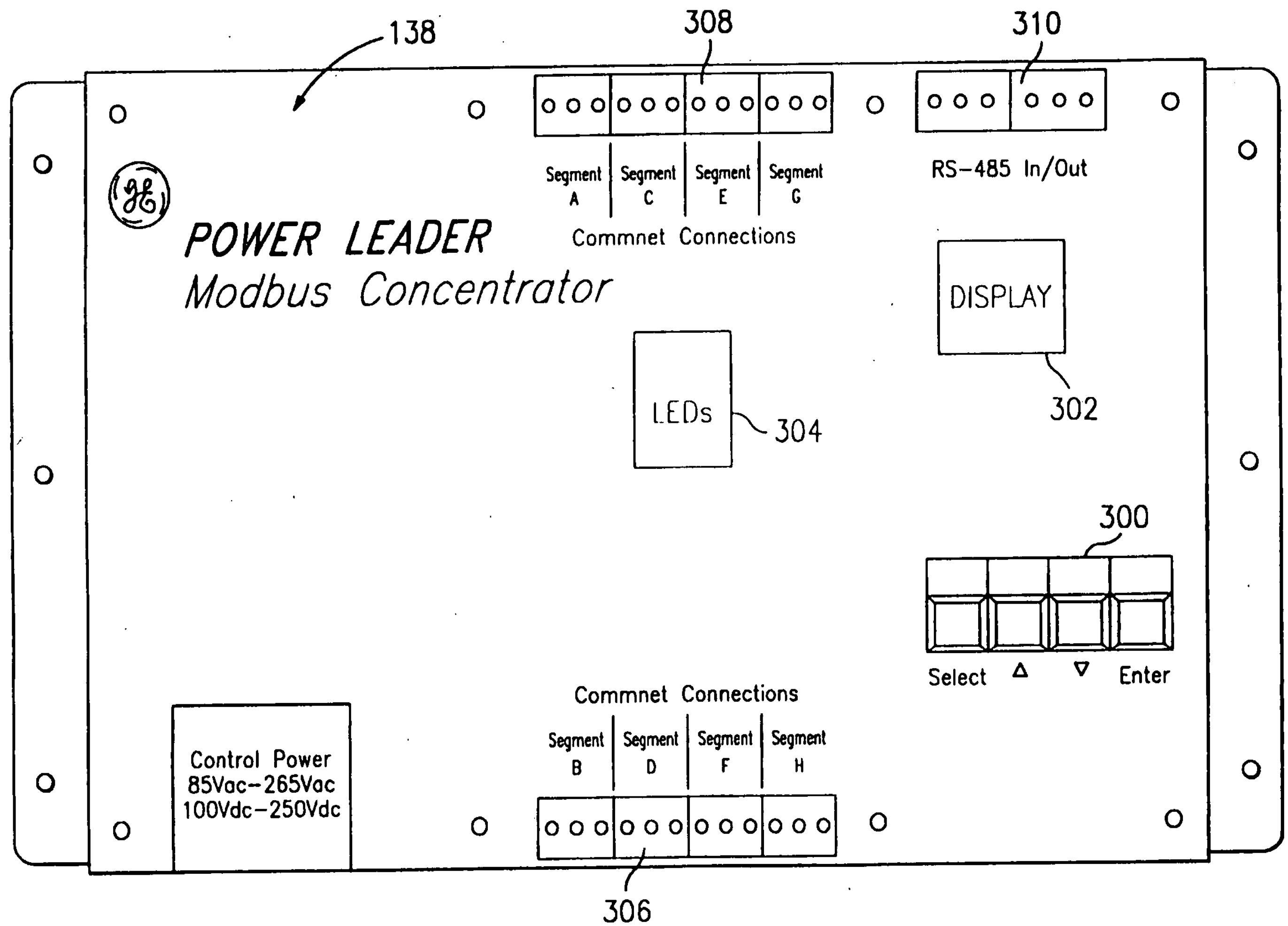

138
308
310
Segment A
Segment C
Segment E
Segment G
Commnet Connections
RS-485 In/Out
POWER LEADER
Modbus Concentrator
DISPLAY
302
LEDs
304
300
Select
Enter
Commnet Connections
Segment B
Segment D
Segment F
Segment H
Control Power
85Vac-265Vac
100Vdc-250Vdc
306

FIG. 63

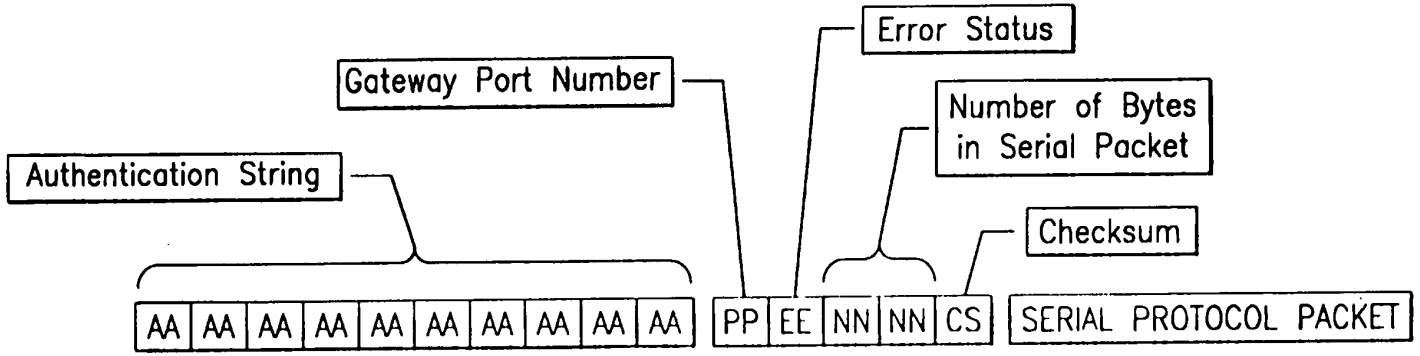

Error Status
Gateway Port Number
Number of Bytes in Serial Packet
Authentication String
Checksum
AA AA AA AA AA AA AA AA AA AA
PP EE NN NN CS
SERIAL PROTOCOL PACKET

FIG. 64

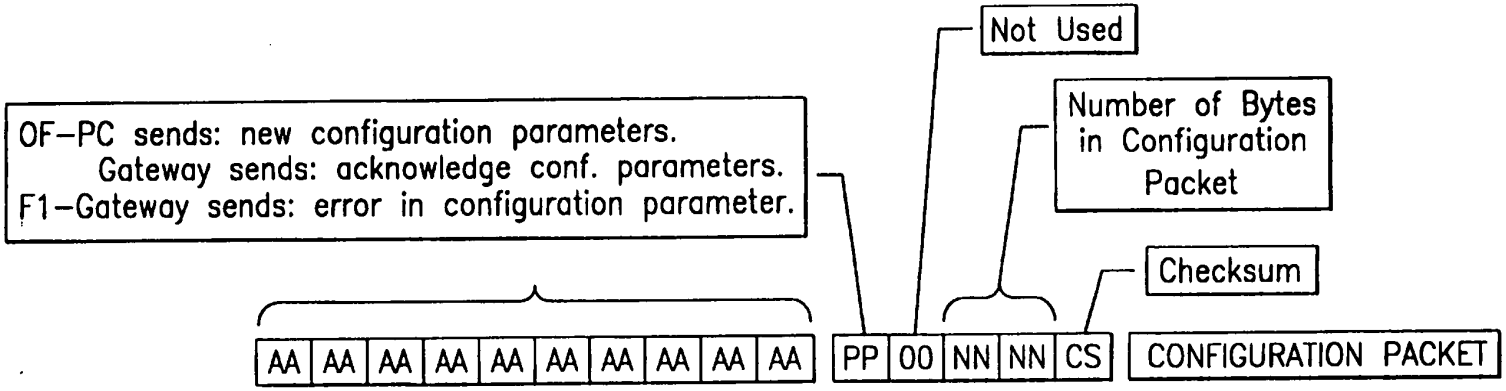
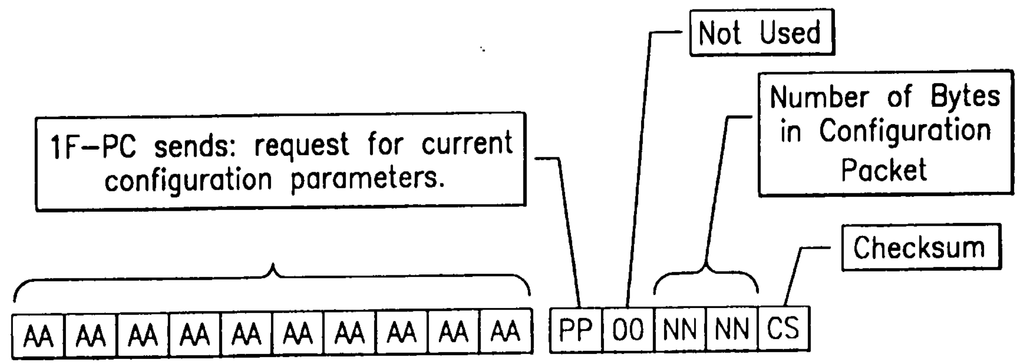

Not Used
OF–PC sends: new configuration parameters.
Gateway sends: acknowledge conf. parameters.
F1–Gateway sends: error in configuration parameter.
Number of Bytes in Configuration Packet
Checksum
AA AA AA AA AA AA AA AA AA AA
PP 00 NN NN CS
CONFIGURATION PACKET

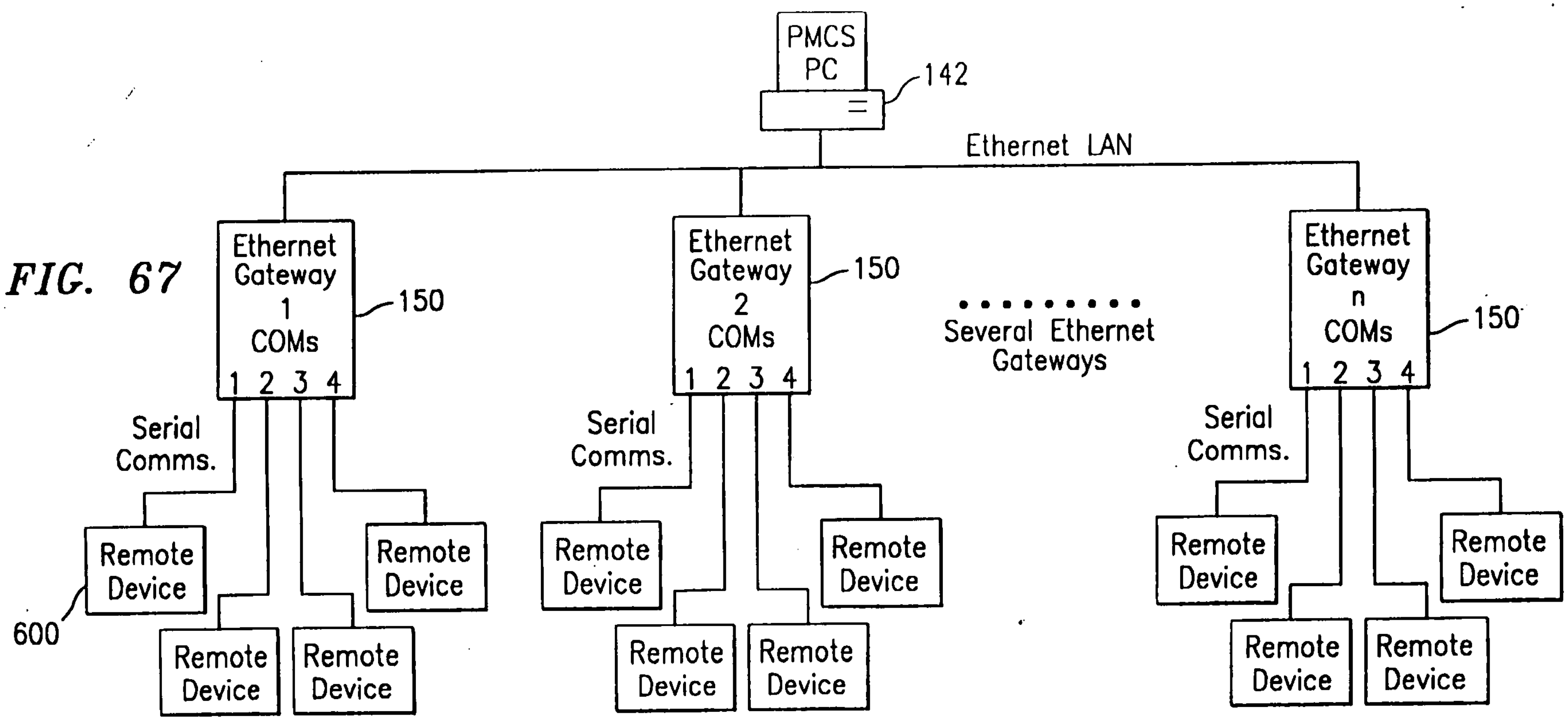
FIG. 65

FIG. 66



1F–PC sends: request for current configuration parameters.
AA AA AA AA AA AA AA AA AA AA
PP 00 NN NN CS
Not Used
Number of Bytes in Configuration Packet
Checksum

FIG. 67



PMCS PC
142
Ethernet LAN
Ethernet Gateway 1 COMs
1 2 3 4
150
Ethernet Gateway 2 COMs
1 2 3 4
150
Several Ethernet Gateways
Ethernet Gateway n COMs
1 2 3 4
150
Serial Comms.
Serial Comms.
Serial Comms.
Remote Device
600

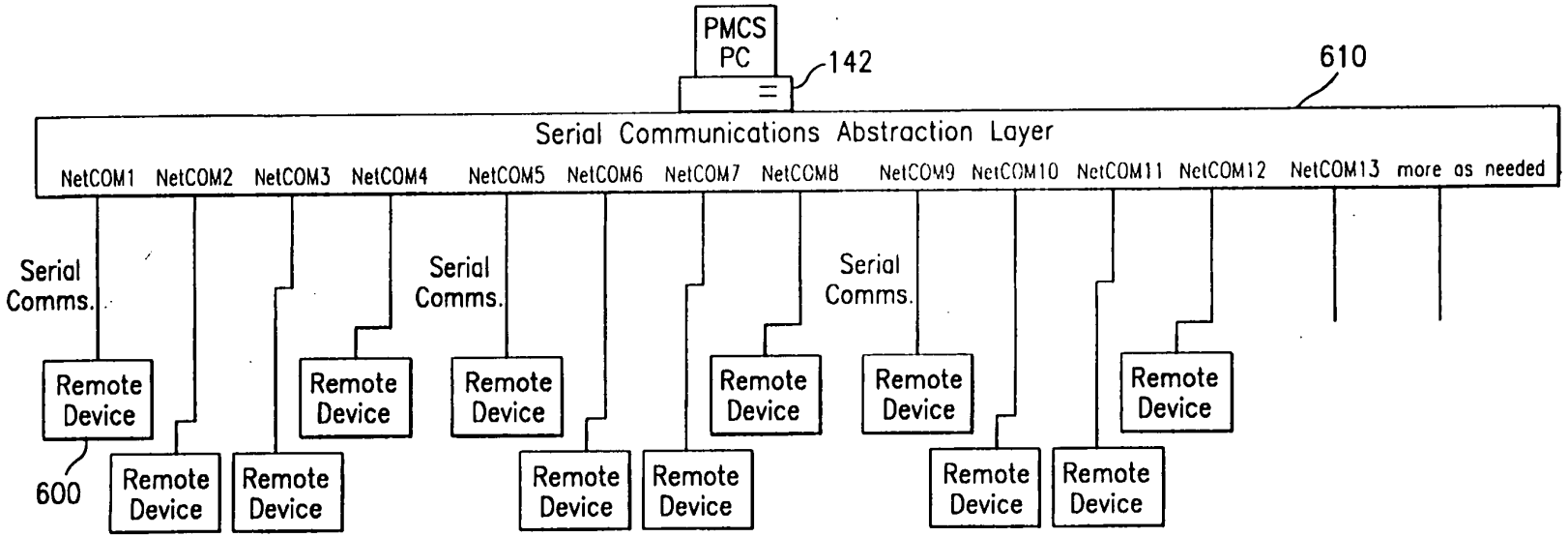


FIG. 68

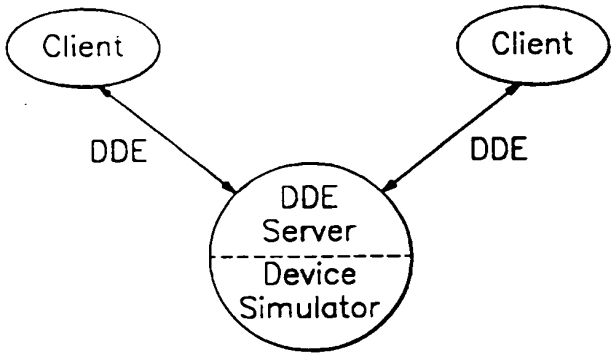


FIG. 69

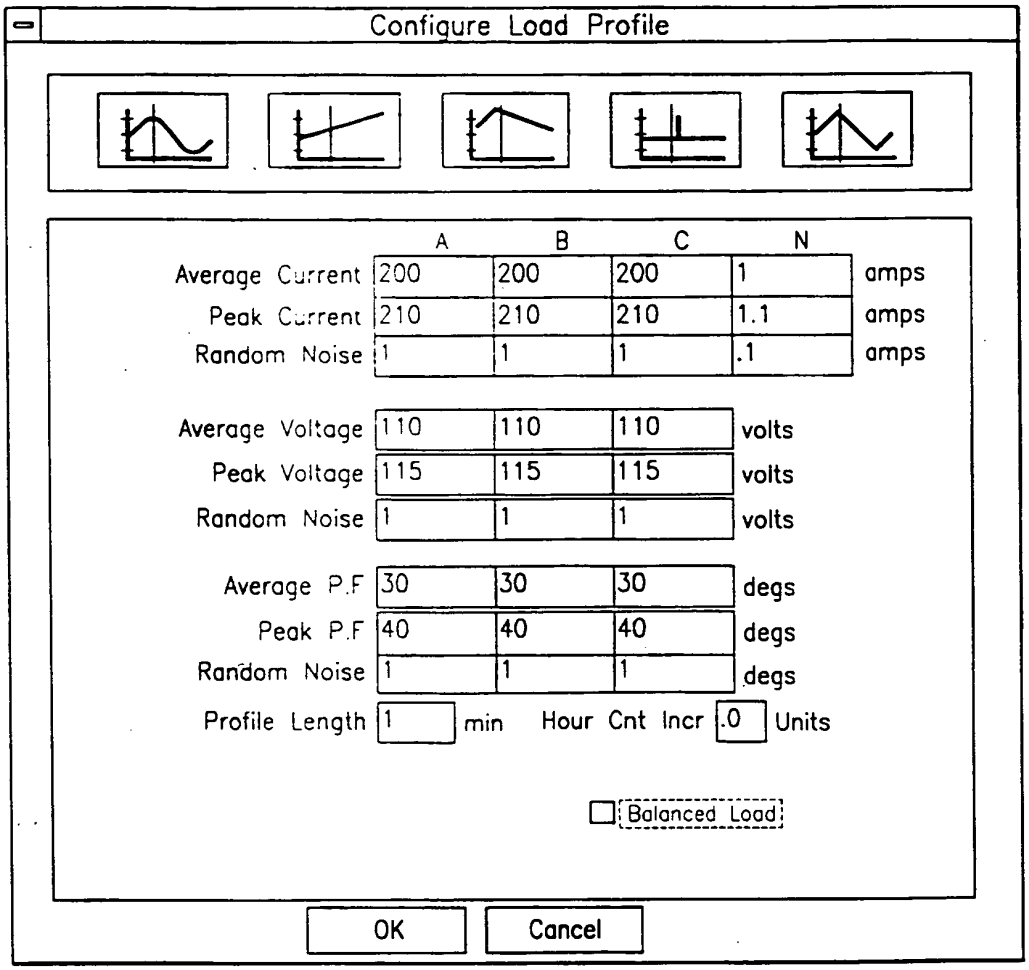

Configure Load Profile
A
B
C
N
Average Current
200
200
200
1
amps
Peak Current
210
210
210
1.1
amps
Random Noise
1
1
1
.1
amps
Average Voltage
110
110
110
volts
Peak Voltage
115
115
115
volts
Random Noise
1
1
1
volts
Average P.F
30
30
30
degs
Peak P.F
40
40
40
degs
Random Noise
1
1
1
degs
Profile Length
1
min
Hour Cnt Incr
.0
Units
Balanced Load
OK
Cancel

FIG. 69A

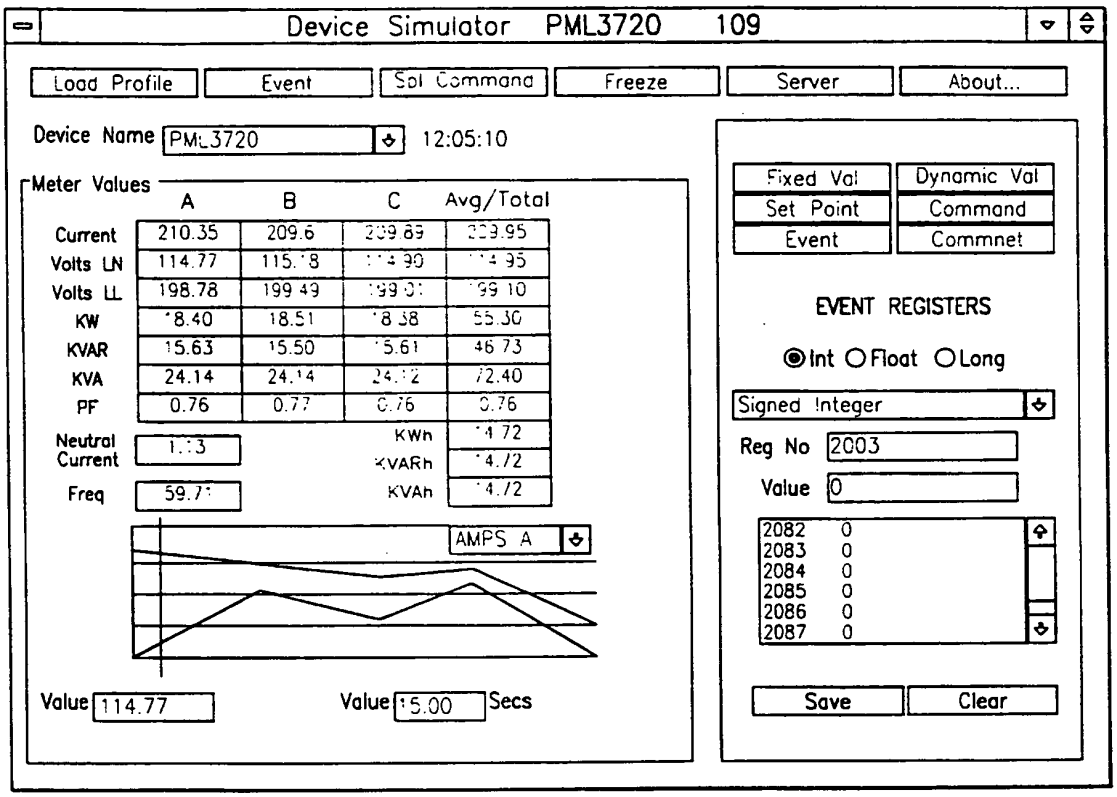

Device Simulator PML3720 109
Load Profile
Event
Sol Command
Freeze
Server
About...
Device Name PML3720
12:05:10
Meter Values
A
B
C
Avg/Total
Current 210.35 209.6 209.89 209.95
Volts LN 114.77 115.18 114.90 114.95
Volts LL 198.78 199.49 199.01 199.10
KW 18.40 18.51 18.38 55.30
KVAR 15.63 15.50 15.61 46.73
KVA 24.14 24.14 24.12 72.40
PF 0.76 0.77 0.76 0.76
Neutral Current 1.13
Freq 59.71
KWh 14.72
KVARh 14.72
KVAh 14.72
AMPS A
Value 114.77
Value 15.00 Secs
Fixed Val
Dynamic Val
Set Point
Command
Event
Commnet
EVENT REGISTERS
Int Float Long
Signed Integer
Reg No 2003
Value 0
2082 0
2083 0
2084 0
2085 0
2086 0
2087 0
Save
Clear

FIG. 69B

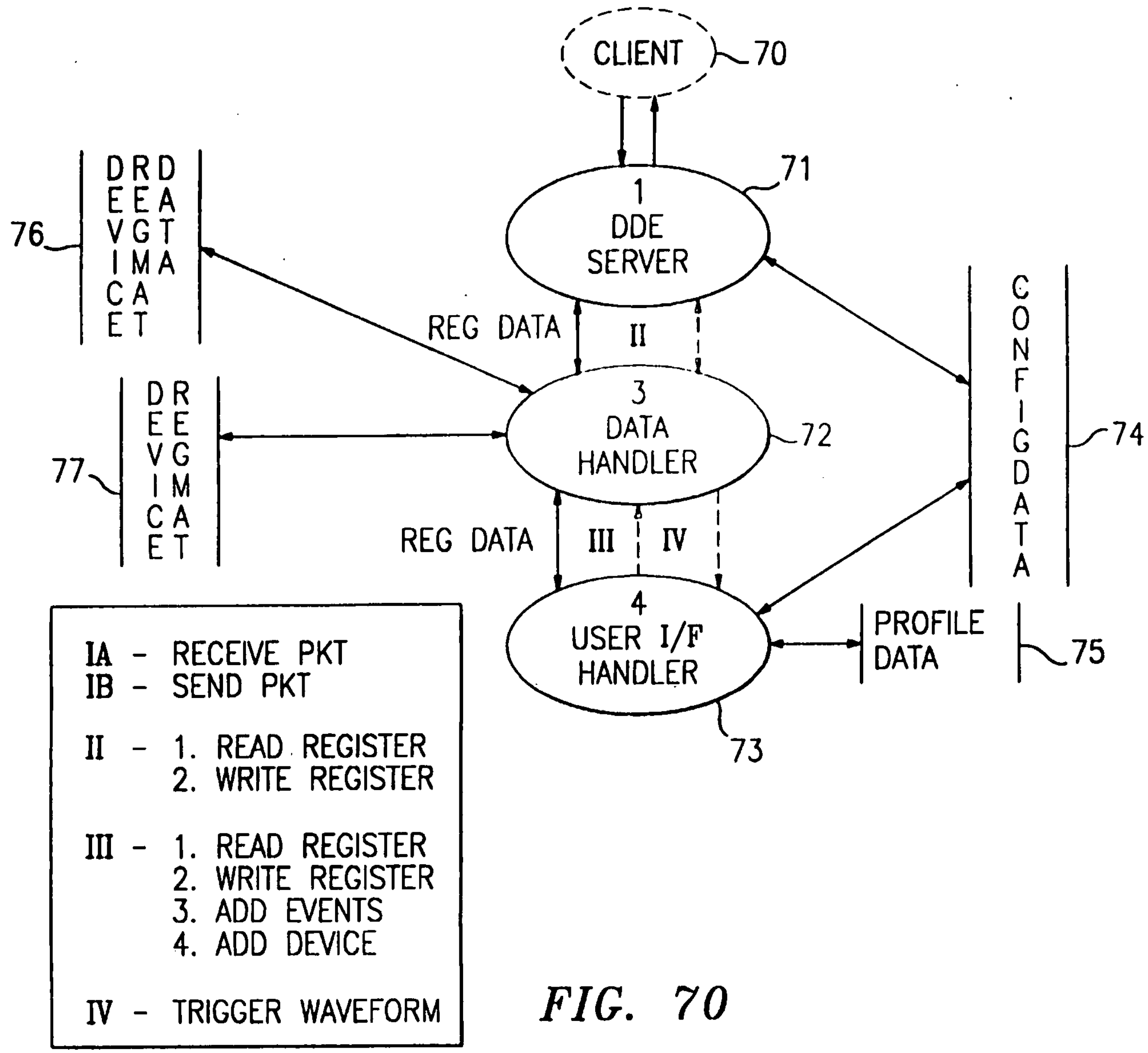

CLIENT
70
1
DDE
SERVER
71
3
DATA
HANDLER
72
4
USER I/F
HANDLER
73
REG DATA
REG DATA
II
III
IV
DEVICE
REGIMAGE
DATA
76
DEVICE
REGIMAGE
77
CONFIG DATA
74
PROFILE
DATA
75
IA - RECEIVE PKT
IB - SEND PKT
II - 1. READ REGISTER
2. WRITE REGISTER
III - 1. READ REGISTER
2. WRITE REGISTER
3. ADD EVENTS
4. ADD DEVICE
IV - TRIGGER WAVEFORM

FIG. 70

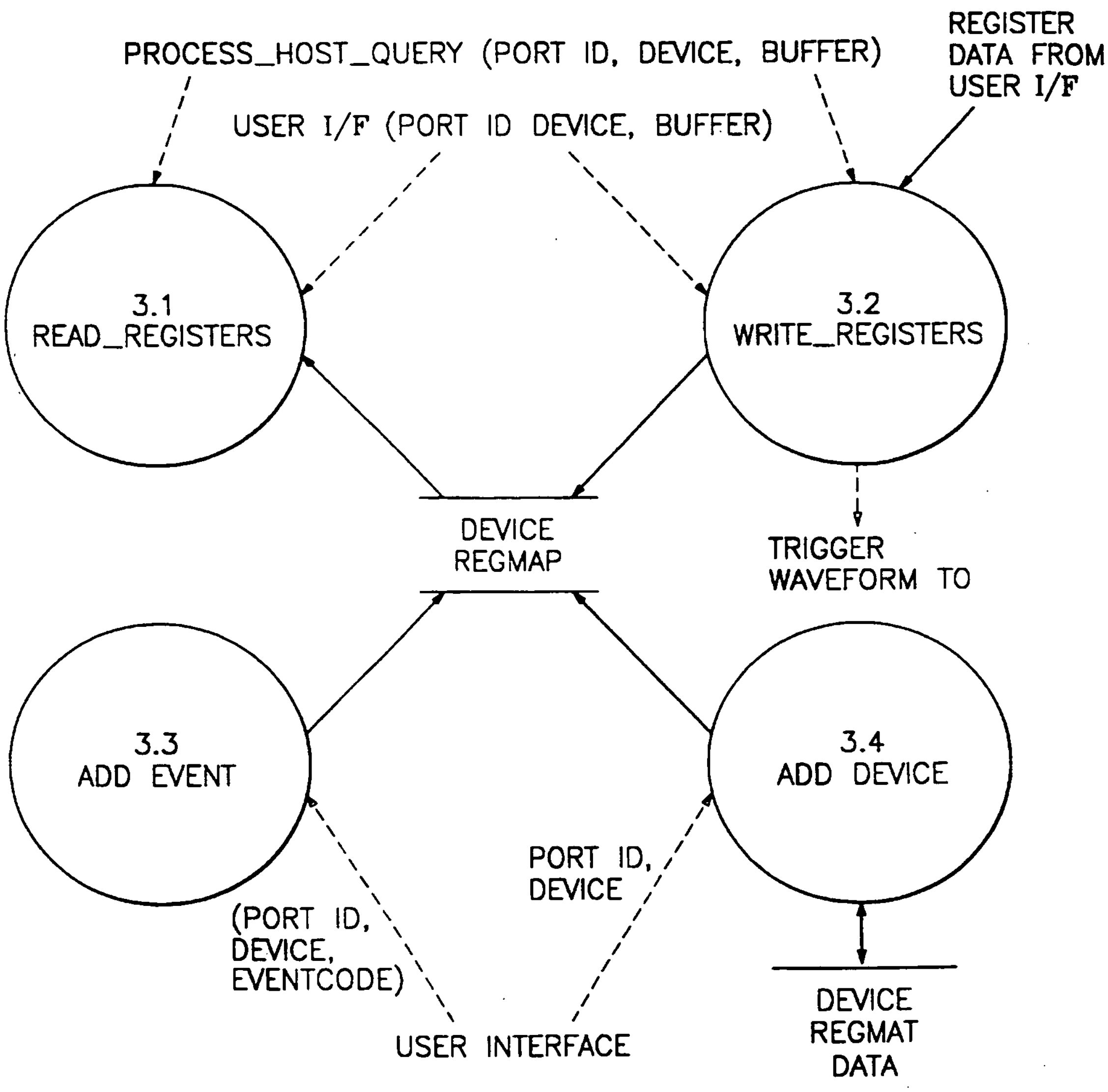

PROCESS_HOST_QUERY (PORT ID, DEVICE, BUFFER)
REGISTER DATA FROM USER I/F
USER I/F (PORT ID DEVICE, BUFFER)
3.1 READ_REGISTERS
3.2 WRITE_REGISTERS
DEVICE REGMAP
TRIGGER WAVEFORM TO
3.3 ADD EVENT
3.4 ADD DEVICE
PORT ID, DEVICE
(PORT ID, DEVICE, EVENTCODE)
USER INTERFACE
DEVICE REGMAT DATA

FIG. 71

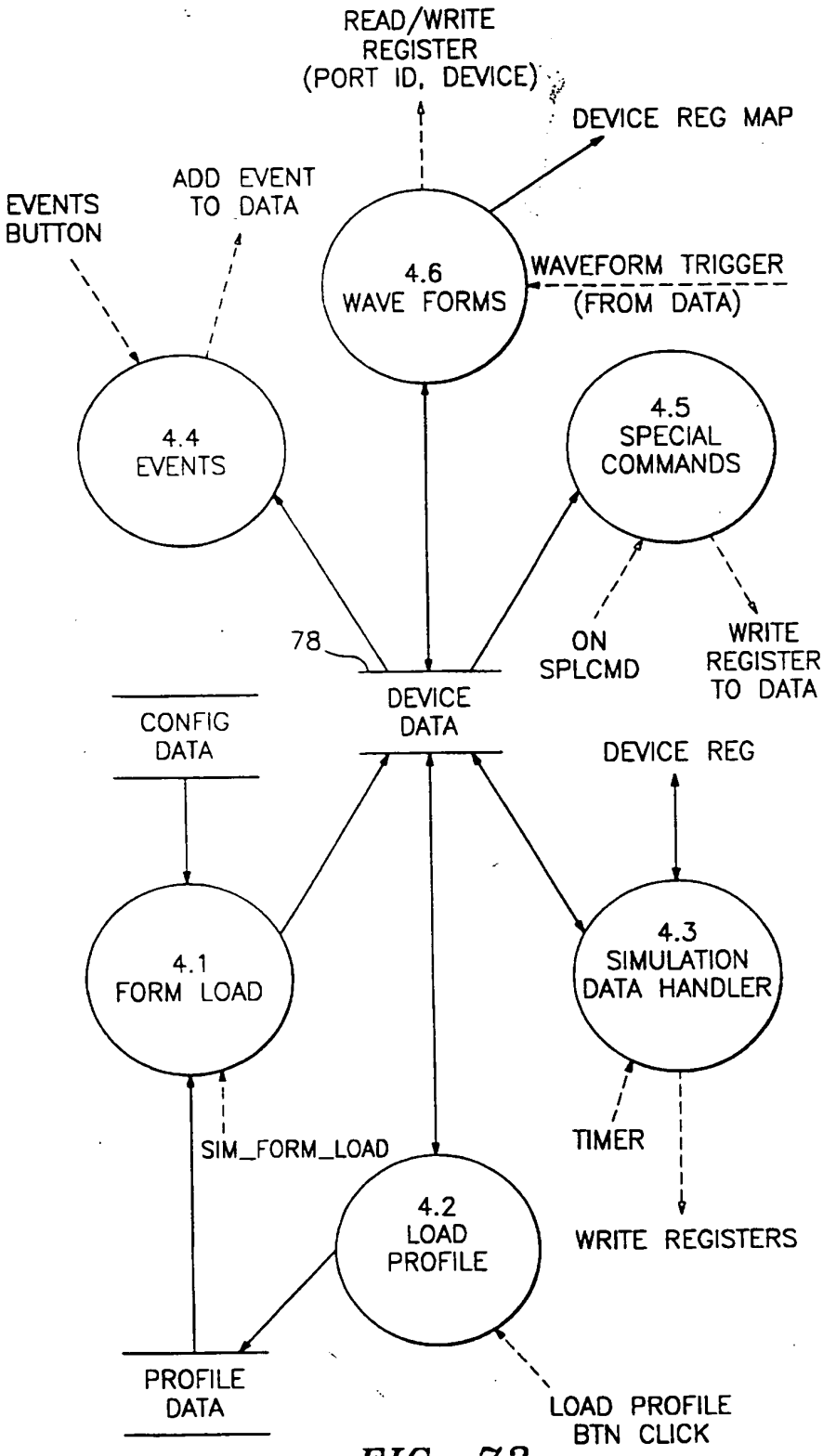

READ/WRITE
REGISTER
(PORT ID, DEVICE)
DEVICE REG MAP
ADD EVENT
TO DATA
EVENTS
BUTTON
4.6
WAVE FORMS
WAVEFORM TRIGGER
(FROM DATA)
4.4
EVENTS
4.5
SPECIAL
COMMANDS
78
ON
SPLCMD
WRITE
REGISTER
TO DATA
DEVICE
DATA
CONFIG
DATA
DEVICE REG
4.1
FORM LOAD
4.3
SIMULATION
DATA HANDLER
SIM_FORM_LOAD
TIMER
4.2
LOAD
PROFILE
WRITE REGISTERS
PROFILE
DATA
LOAD PROFILE
BTN CLICK

FIG. 72

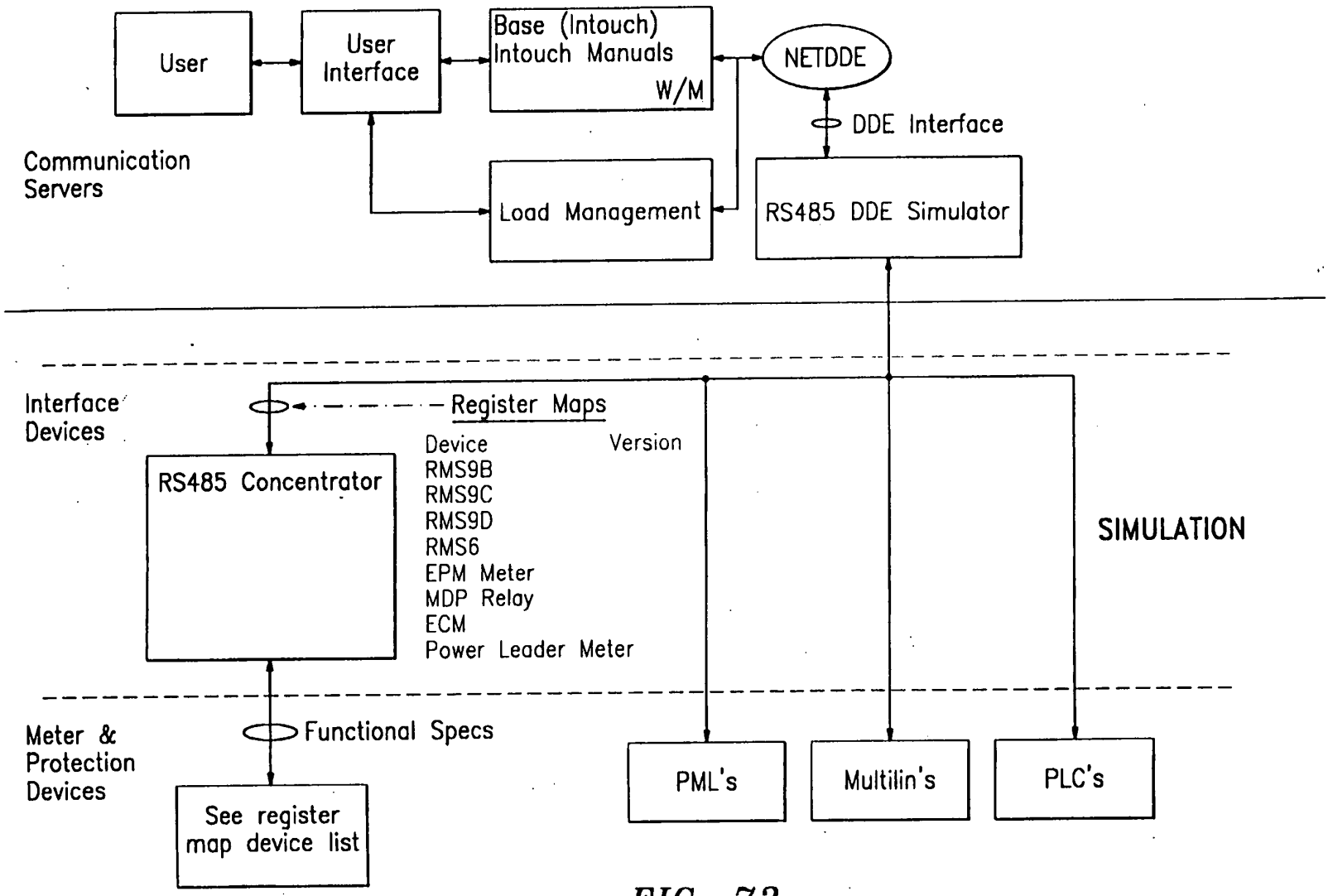


FIG. 73

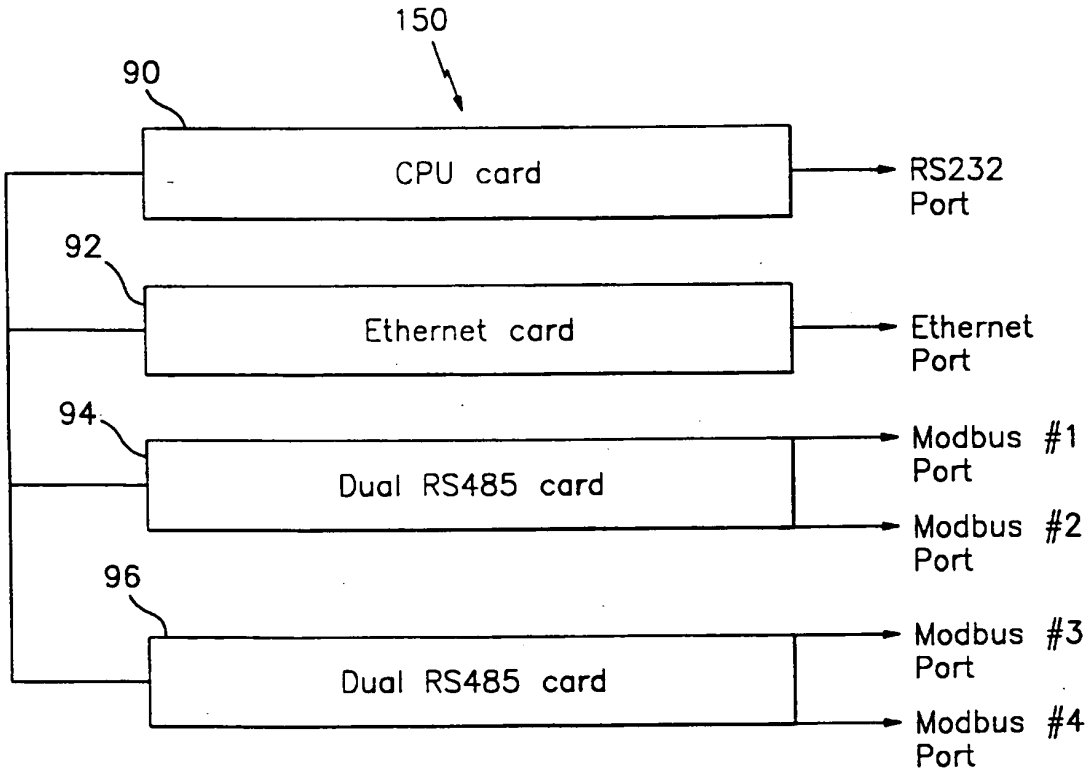

150
90
CPU card
RS232 Port
92
Ethernet card
Ethernet Port
94
Dual RS485 card
Modbus #1 Port
Modbus #2 Port
96
Dual RS485 card
Modbus #3 Port
Modbus #4 Port

FIG. 74

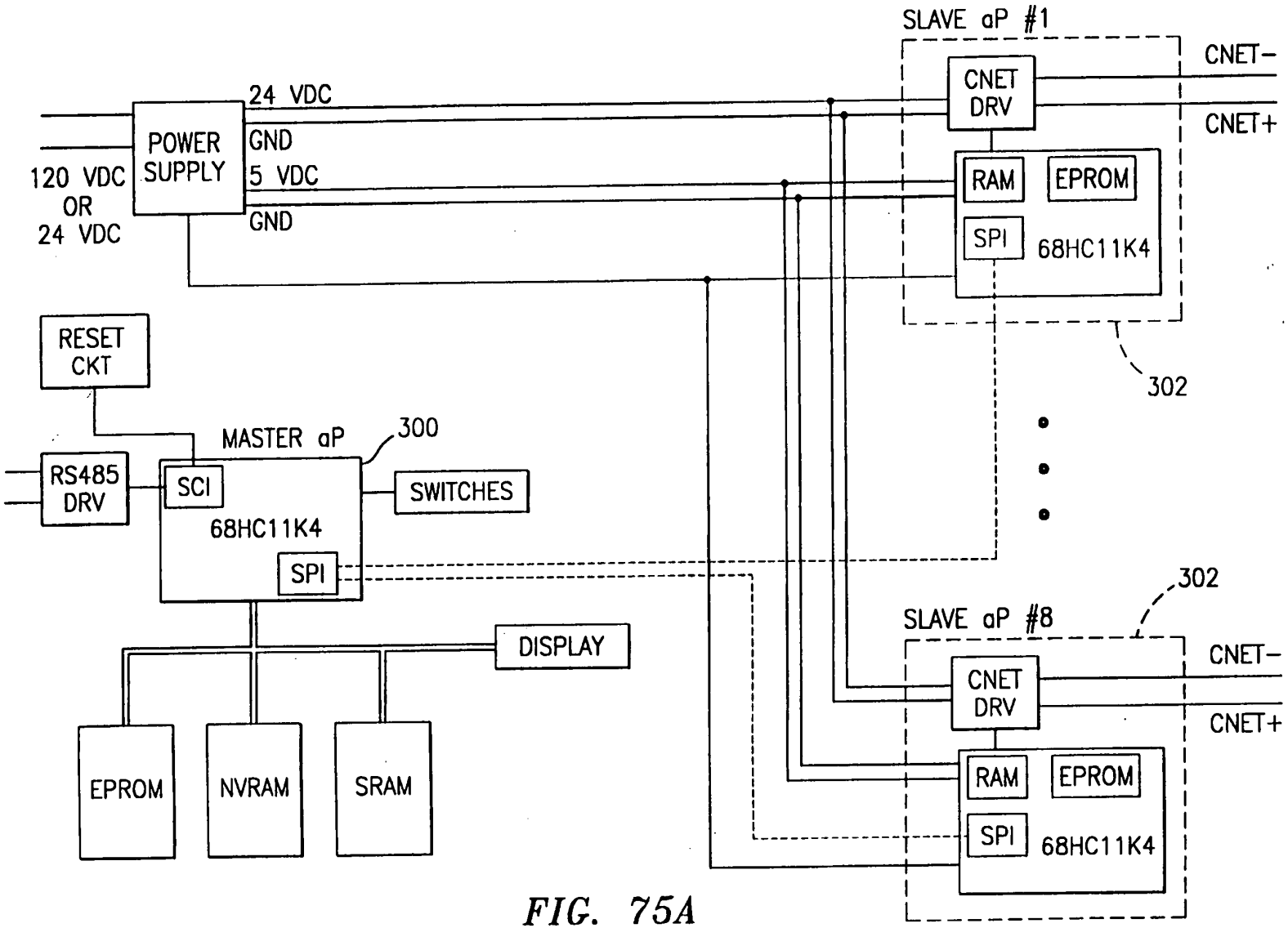

SLAVE aP #1
CNET DRV
CNET-
CNET+
RAM
EPROM
SPI
68HC11K4
302
24 VDC
GND
5 VDC
GND
POWER SUPPLY
120 VDC OR 24 VDC
RESET CKT
MASTER aP
300
RS485 DRV
SCI
SWITCHES
68HC11K4
SPI
DISPLAY
EPROM
NVRAM
SRAM
302
SLAVE aP #8
CNET DRV
CNET-
CNET+
RAM
EPROM
SPI
68HC11K4

FIG. 75A

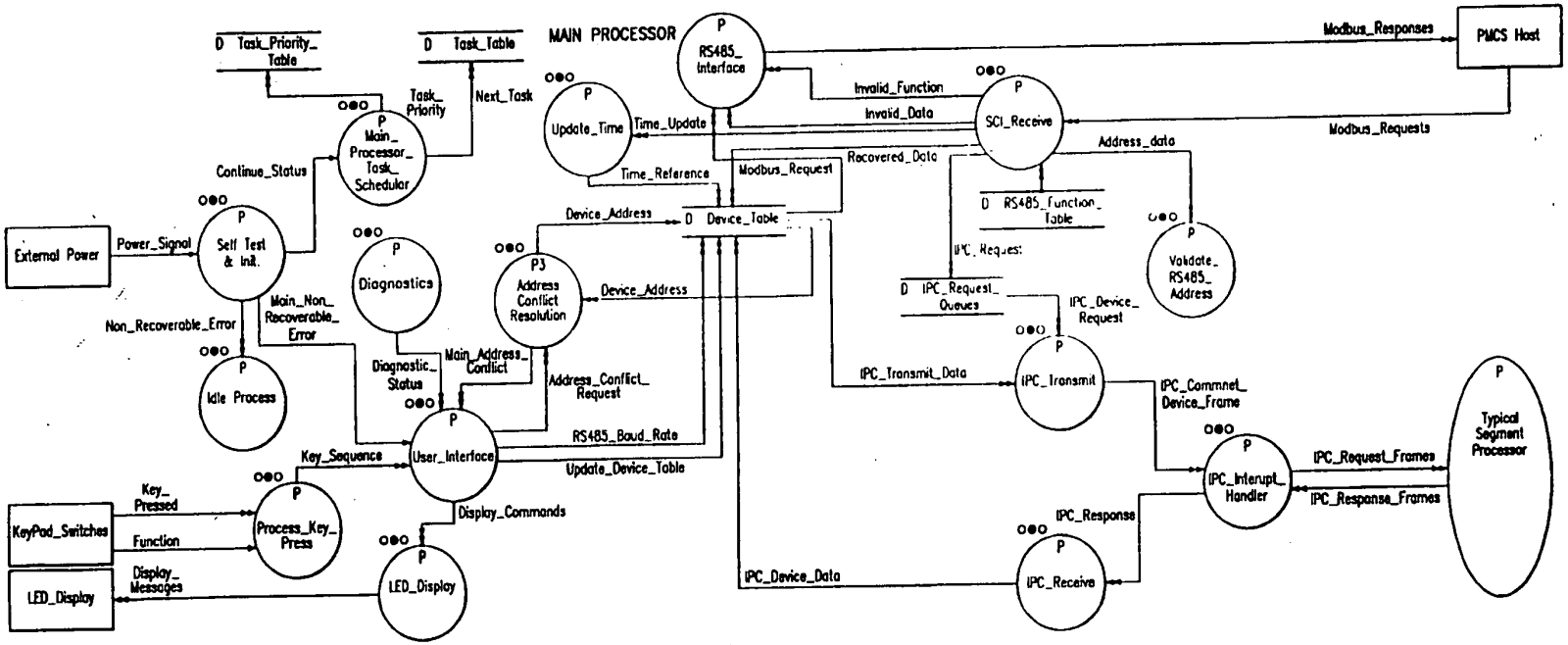


FIG. 75B

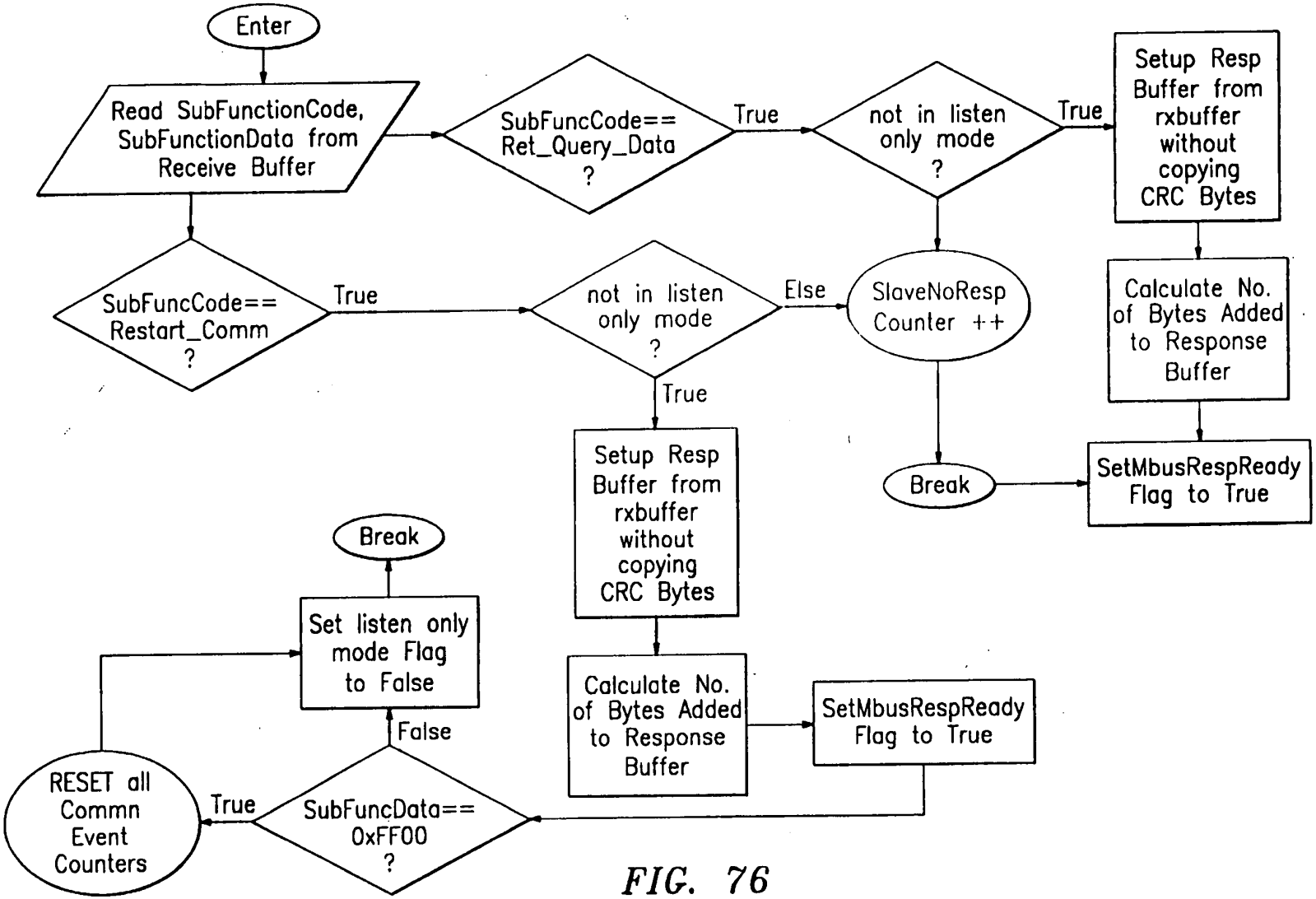

Enter
Read SubFunctionCode, SubFunctionData from Receive Buffer
SubFuncCode== Ret_Query_Data ?
True
not in listen only mode ?
True
Setup Resp Buffer from rxbuffer without copying CRC Bytes
Calculate No. of Bytes Added to Response Buffer
SetMbusRespReady Flag to True
SubFuncCode== Restart_Comm ?
True
not in listen only mode ?
Else
SlaveNoResp Counter ++
Break
True
Setup Resp Buffer from rxbuffer without copying CRC Bytes
Calculate No. of Bytes Added to Response Buffer
SetMbusRespReady Flag to True
Break
Set listen only mode Flag to False
False
RESET all Commn Event Counters
True
SubFuncData== 0xFF00 ?

FIG. 76

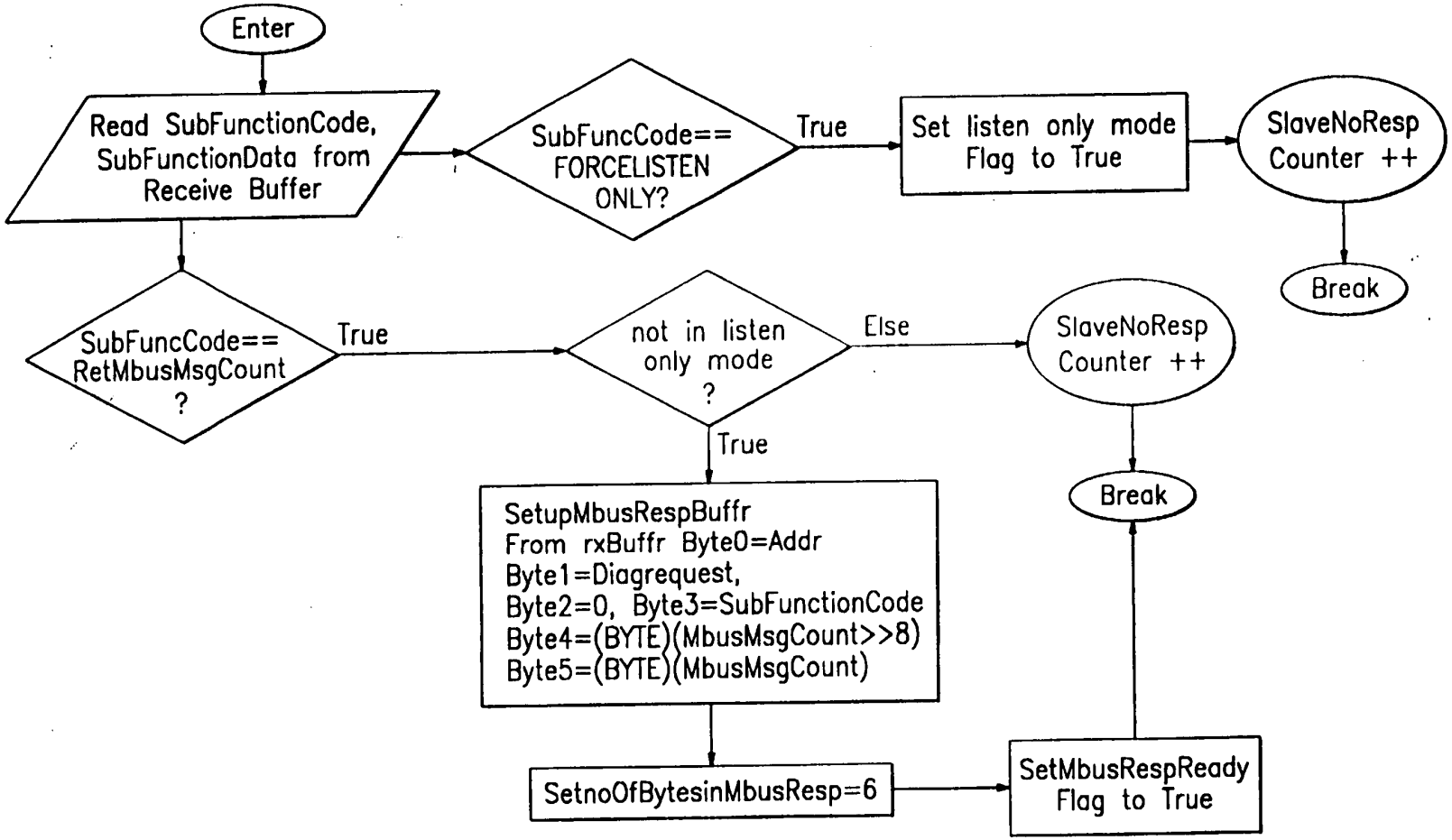

Enter
Read SubFunctionCode, SubFunctionData from Receive Buffer
SubFuncCode== FORCELISTEN ONLY?
True
Set listen only mode Flag to True
SlaveNoResp Counter ++
Break
SubFuncCode== RetMbusMsgCount ?
True
not in listen only mode ?
Else
SlaveNoResp Counter ++
Break
True
SetupMbusRespBuffr
From rxBuffr Byte0=Addr
Byte1=Diagrequest,
Byte2=0, Byte3=SubFunctionCode
Byte4=(BYTE)(MbusMsgCount>>8)
Byte5=(BYTE)(MbusMsgCount)
SetnoOfBytesinMbusResp=6
SetMbusRespReady Flag to True

FIG. 77

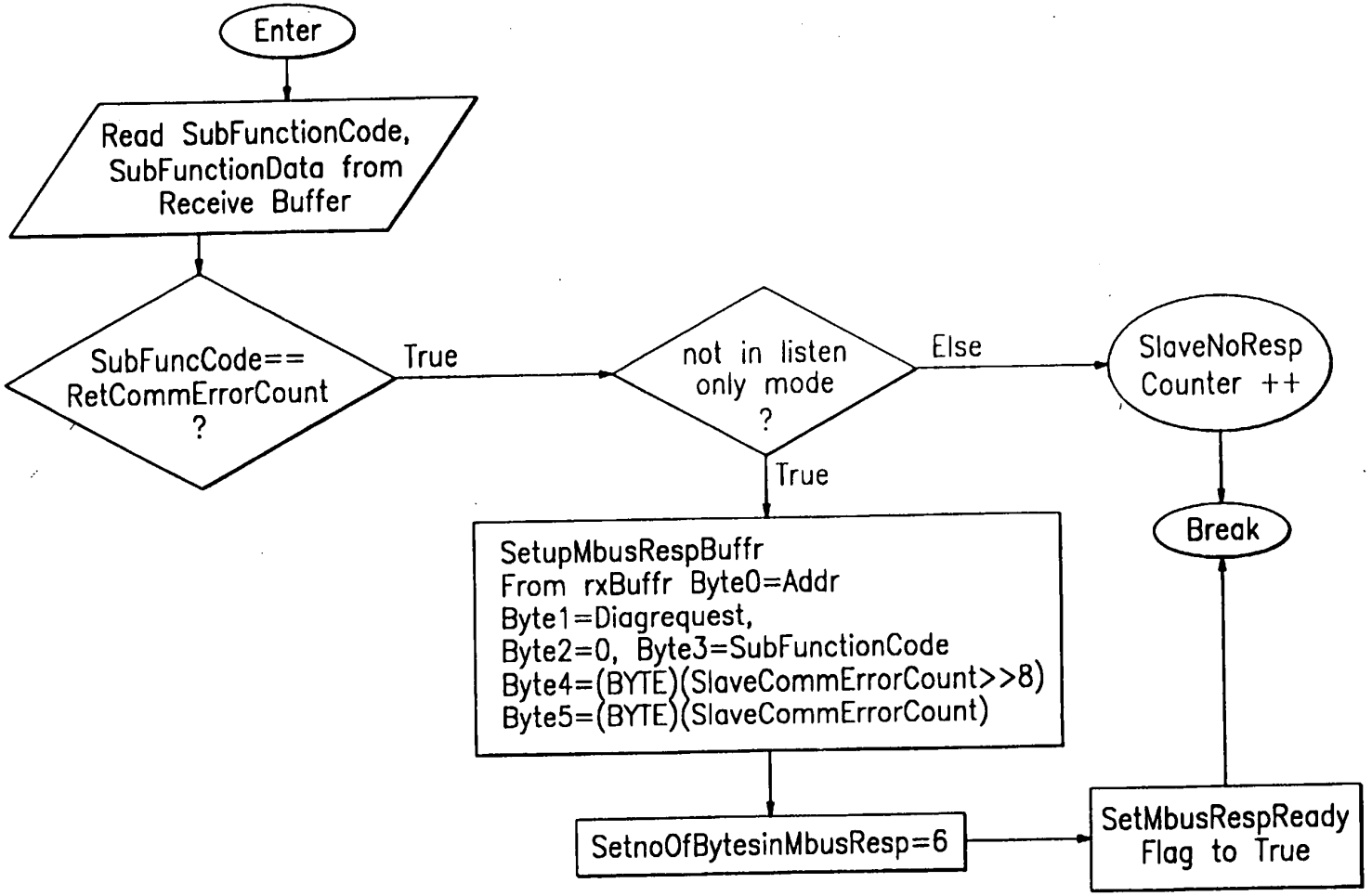

Enter
Read SubFunctionCode, SubFunctionData from Receive Buffer
SubFuncCode== RetCommErrorCount ?
True
not in listen only mode ?
Else
SlaveNoResp Counter ++
True
Break
SetupMbusRespBuffr
From rxBuffr Byte0=Addr
Byte1=Diagrequest,
Byte2=0, Byte3=SubFunctionCode
Byte4=(BYTE)(SlaveCommErrorCount>>8)
Byte5=(BYTE)(SlaveCommErrorCount)
SetnoOfBytesinMbusResp=6
SetMbusRespReady Flag to True

FIG. 78

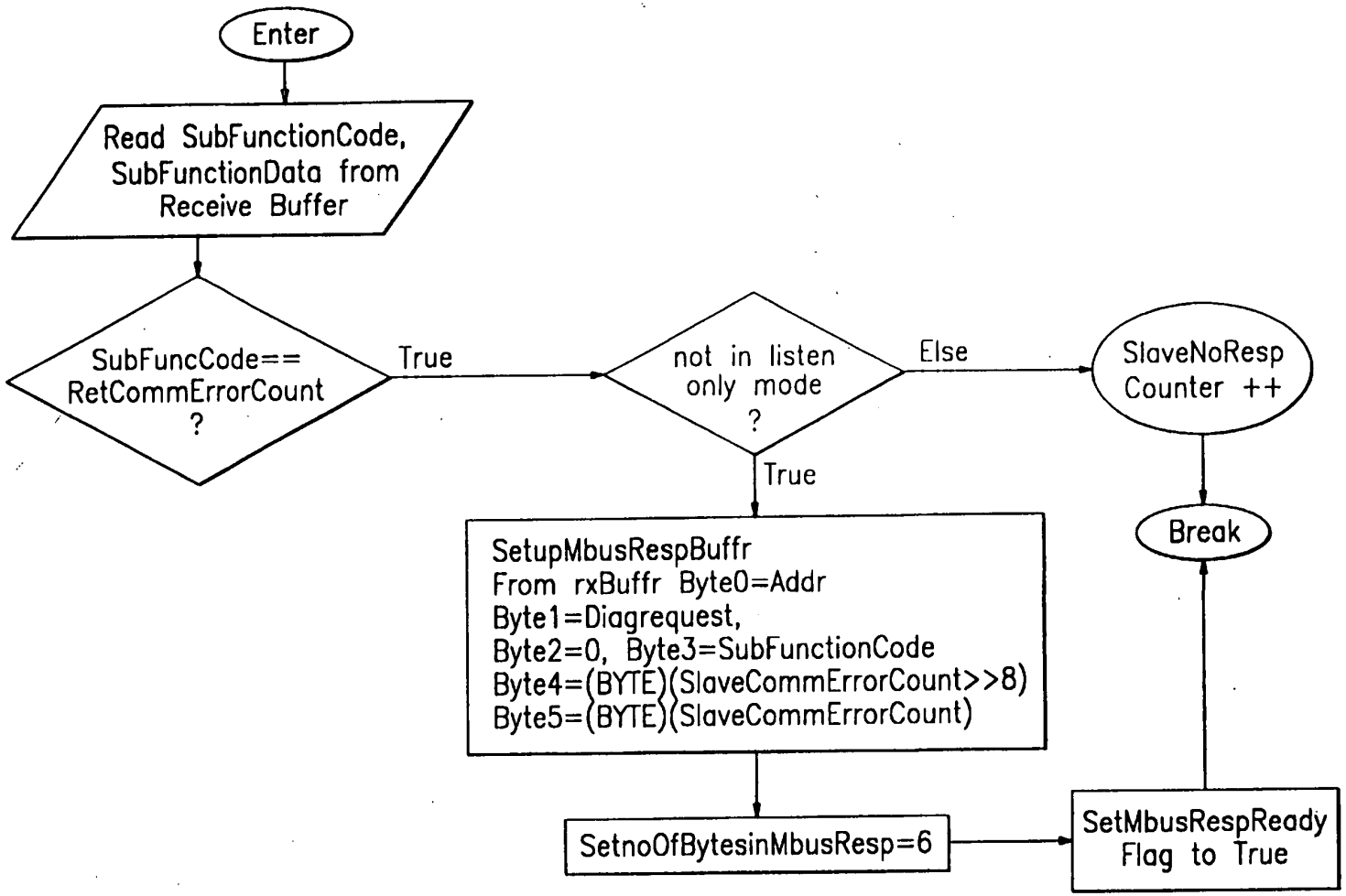

Enter
Read SubFunctionCode, SubFunctionData from Receive Buffer
SubFuncCode== RetCommErrorCount ?
True
not in listen only mode ?
Else
SlaveNoResp Counter ++
True
Break
SetupMbusRespBuffr
From rxBuffr Byte0=Addr
Byte1=Diagrequest,
Byte2=0, Byte3=SubFunctionCode
Byte4=(BYTE)(SlaveCommErrorCount>>8)
Byte5=(BYTE)(SlaveCommErrorCount)
SetnoOfBytesinMbusResp=6
SetMbusRespReady Flag to True

FIG. 79

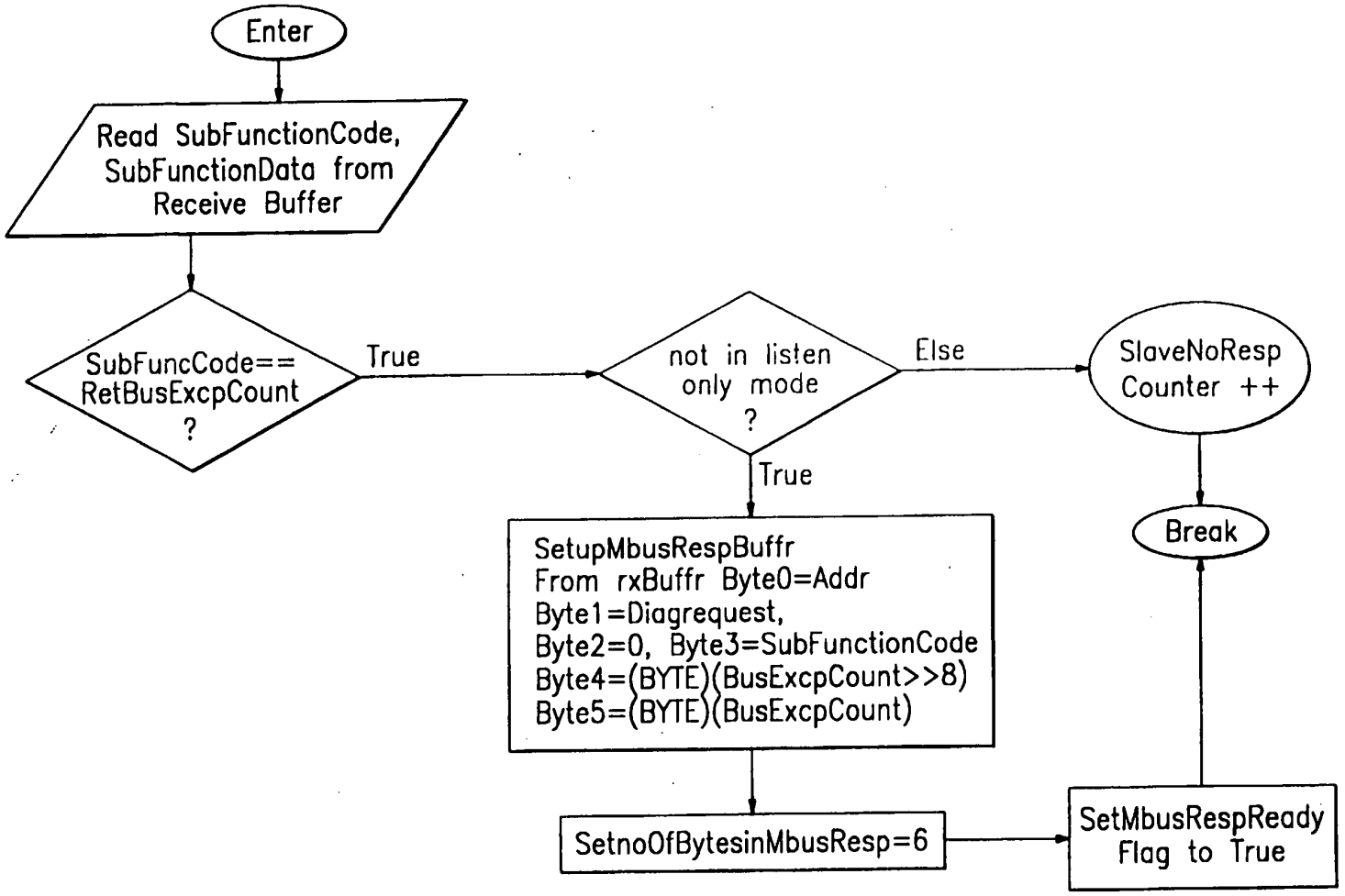

Enter
Read SubFunctionCode, SubFunctionData from Receive Buffer
SubFuncCode== RetBusExcpCount ?
True
not in listen only mode ?
Else
SlaveNoResp Counter ++
True
Break
SetupMbusRespBuffr
From rxBuffr Byte0=Addr
Byte1=Diagrequest,
Byte2=0, Byte3=SubFunctionCode
Byte4=(BYTE)(BusExcpCount>>8)
Byte5=(BYTE)(BusExcpCount)
SetnoOfBytesinMbusResp=6
SetMbusRespReady Flag to True

FIG. 80

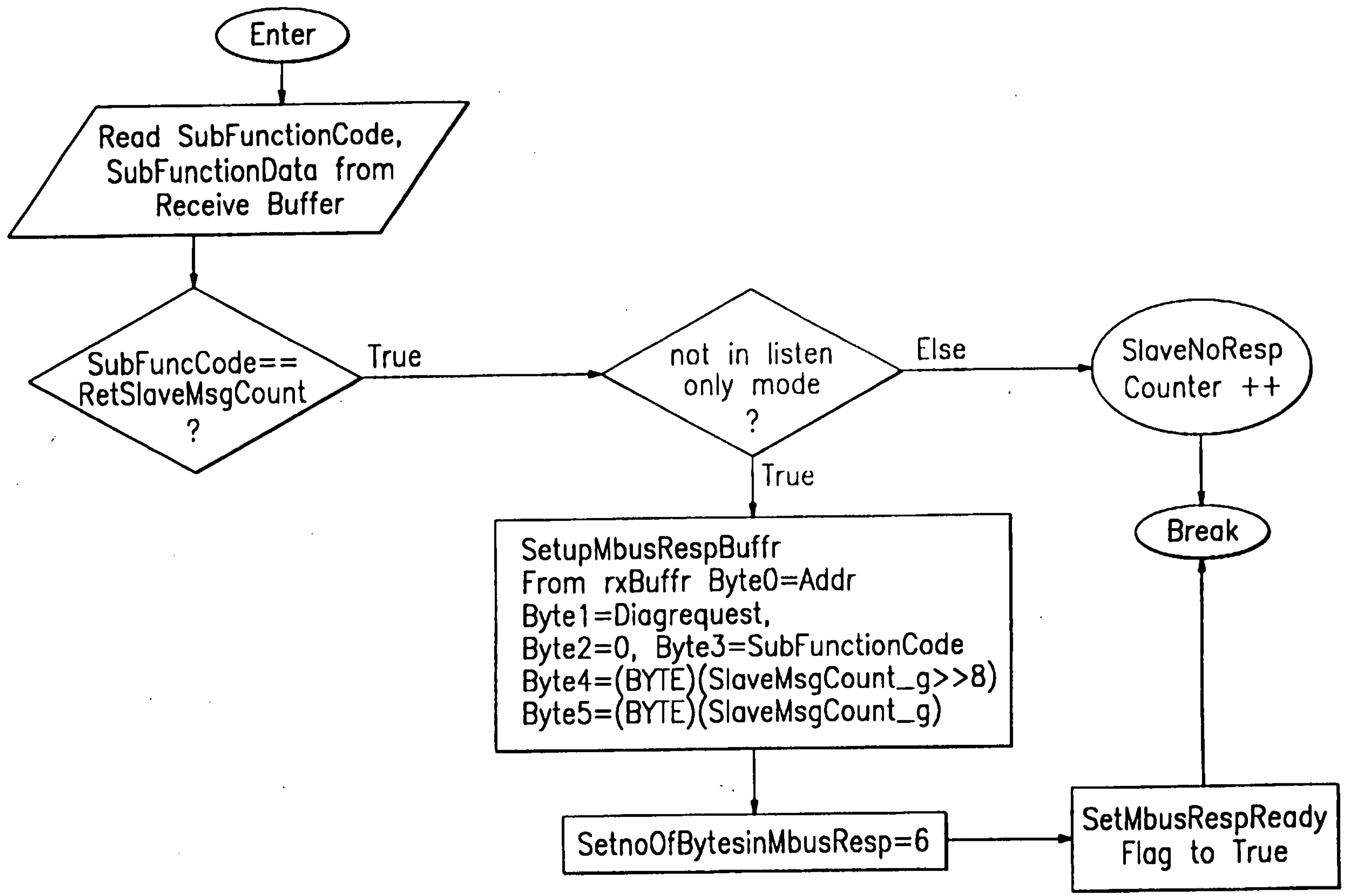

Enter
Read SubFunctionCode, SubFunctionData from Receive Buffer
SubFuncCode== RetSlaveMsgCount ?
True
not in listen only mode ?
Else
SlaveNoResp Counter ++
True
SetupMbusRespBuffr
From rxBuffr Byte0=Addr
Byte1=Diagrequest,
Byte2=0, Byte3=SubFunctionCode
Byte4=(BYTE)(SlaveMsgCount_g>>8)
Byte5=(BYTE)(SlaveMsgCount_g)
SetnoOfBytesinMbusResp=6
SetMbusRespReady Flag to True
Break

FIG. 81

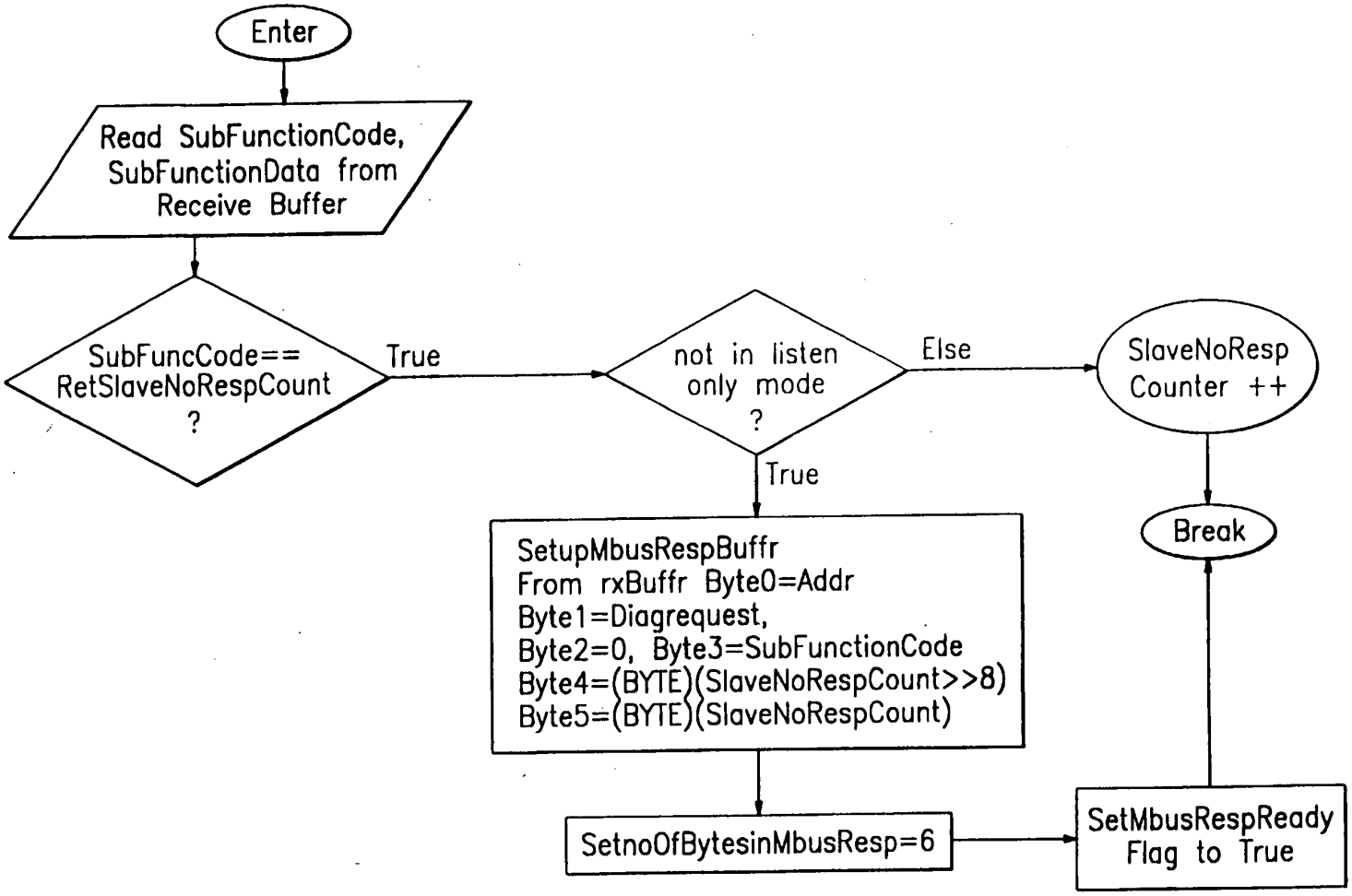

Enter
Read SubFunctionCode, SubFunctionData from Receive Buffer
SubFuncCode== RetSlaveNoRespCount ?
True
not in listen only mode ?
Else
SlaveNoResp Counter ++
True
Break
SetupMbusRespBuffr
From rxBuffr Byte0=Addr
Byte1=Diagrequest,
Byte2=0, Byte3=SubFunctionCode
Byte4=(BYTE)(SlaveNoRespCount>>8)
Byte5=(BYTE)(SlaveNoRespCount)
SetnoOfBytesinMbusResp=6
SetMbusRespReady Flag to True

FIG. 82

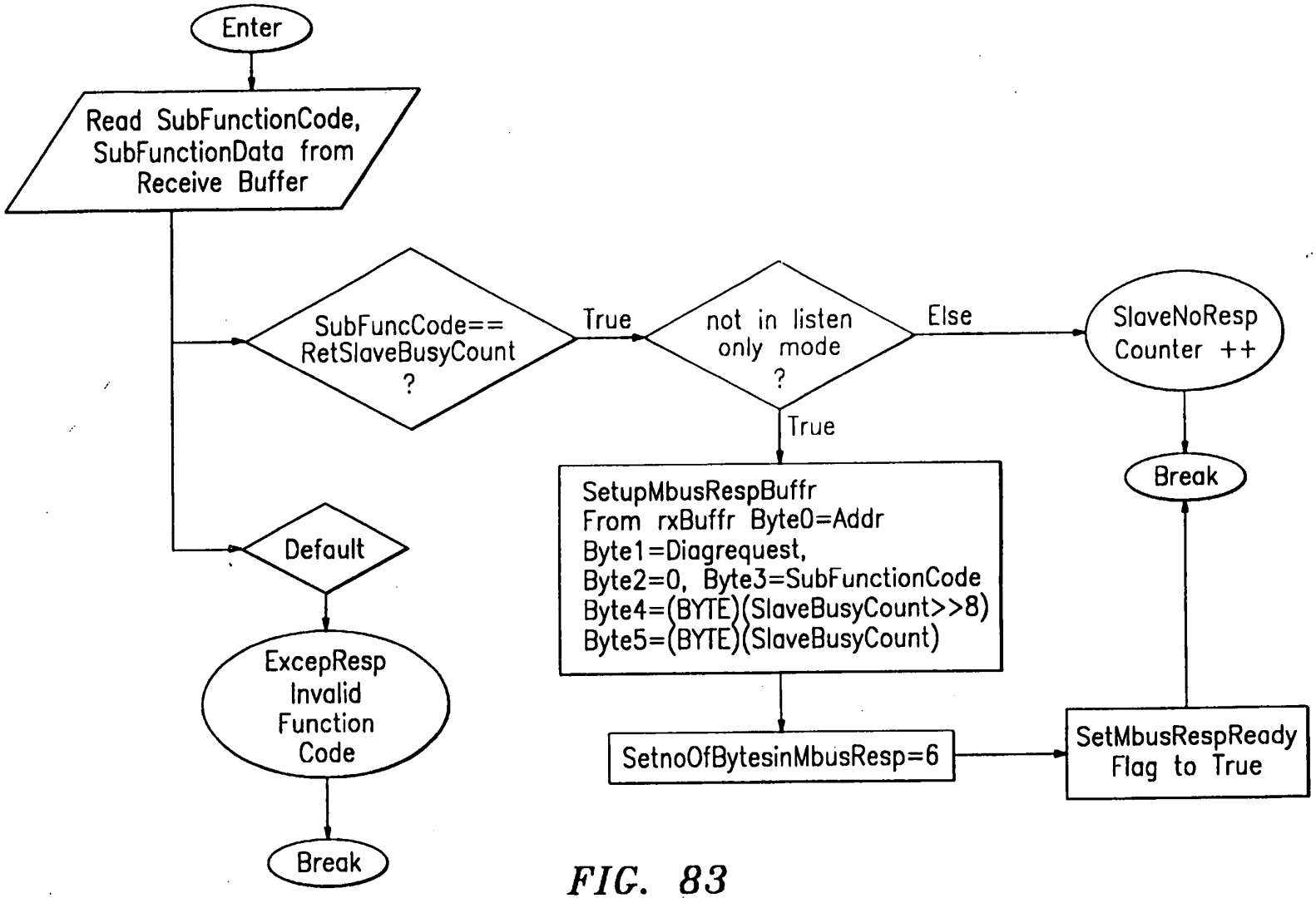

Enter
Read SubFunctionCode, SubFunctionData from Receive Buffer
SubFuncCode== RetSlaveBusyCount ?
True
not in listen only mode ?
Else
SlaveNoResp Counter ++
True
Break
SetupMbusRespBuffr
From rxBuffr Byte0=Addr
Byte1=Diagrequest,
Byte2=0, Byte3=SubFunctionCode
Byte4=(BYTE)(SlaveBusyCount>>8)
Byte5=(BYTE)(SlaveBusyCount)
Default
ExcepResp Invalid Function Code
SetnoOfBytesinMbusResp=6
SetMbusRespReady Flag to True
Break

FIG. 83

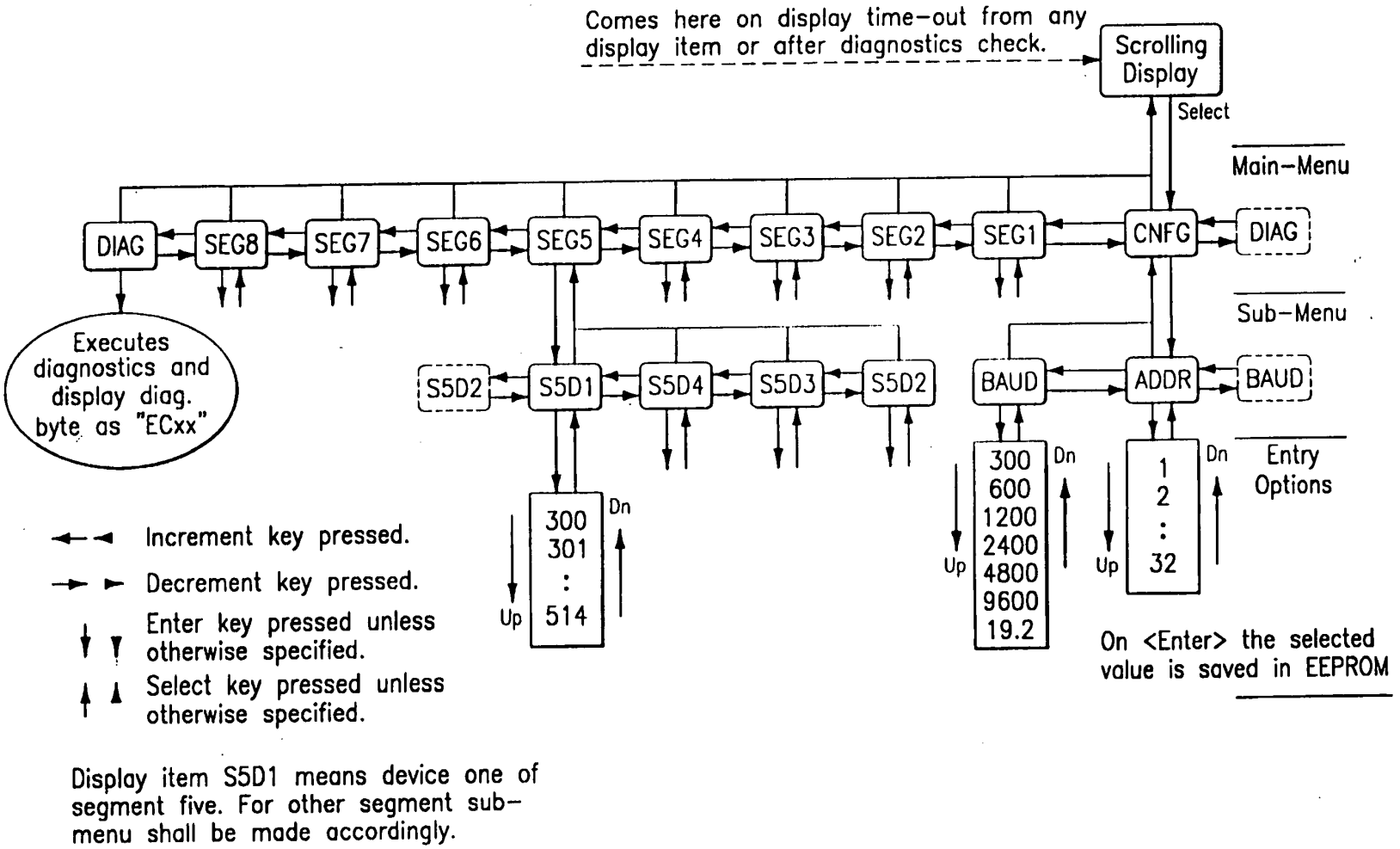

Comes here on display time-out from any display item or after diagnostics check.
Scrolling Display
Select
Main-Menu
DIAG
SEG8
SEG7
SEG6
SEG5
SEG4
SEG3
SEG2
SEG1
CNFG
DIAG
Sub-Menu
Executes diagnostics and display diag. byte as "ECxx"
S5D2
S5D1
S5D4
S5D3
S5D2
BAUD
ADDR
BAUD
Entry Options
300
301
:
514
Dn
Up
300
600
1200
2400
4800
9600
19.2
1
2
:
32
On <Enter> the selected value is saved in EEPROM
Increment key pressed.
Decrement key pressed.
Enter key pressed unless otherwise specified.
Select key pressed unless otherwise specified.
Display item S5D1 means device one of segment five. For other segment sub-menu shall be made accordingly.

FIG. 84

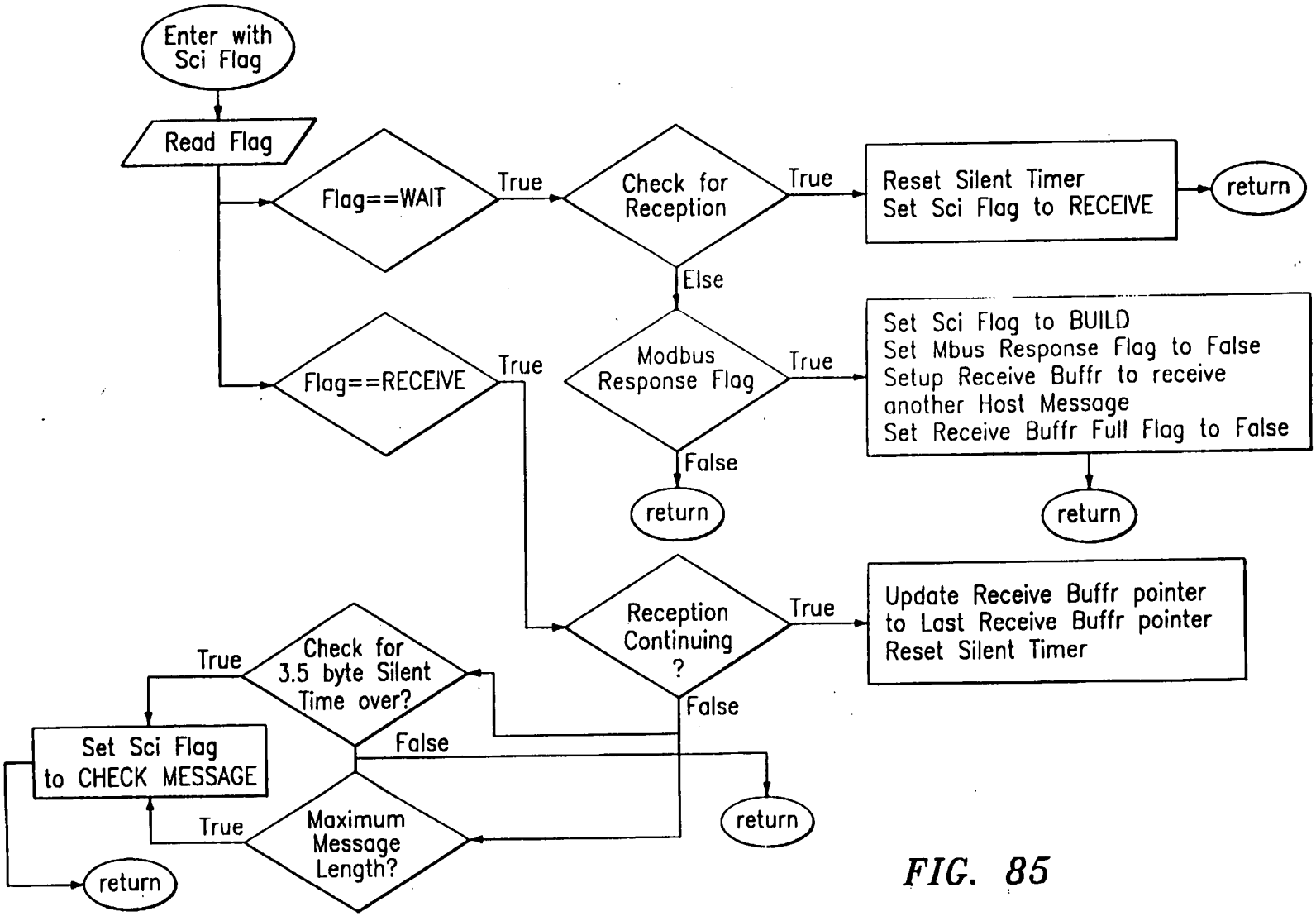
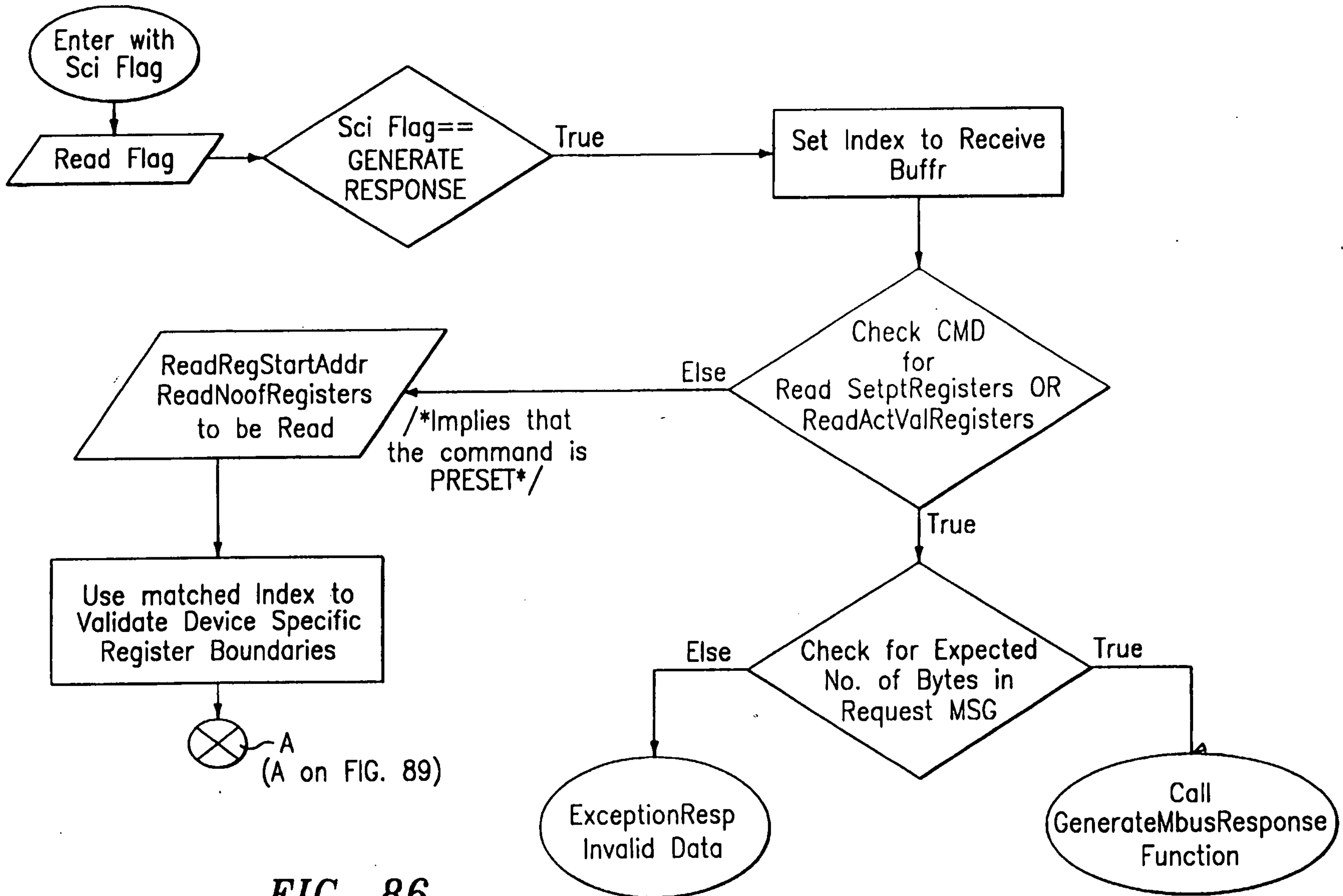


FIG. 85



Enter with Sci Flag
Read Flag
Sci Flag== GENERATE RESPONSE
True
Set Index to Receive Buffr
Check CMD for Read SetptRegisters OR ReadActValRegisters
Else
ReadRegStartAddr ReadNoofRegisters to be Read
/*Implies that the command is PRESET*/
True
Use matched Index to Validate Device Specific Register Boundaries
A
(A on FIG. 89)
Check for Expected No. of Bytes in Request MSG
Else
True
ExceptionResp Invalid Data
Call GenerateMbusResponse Function

FIG. 86

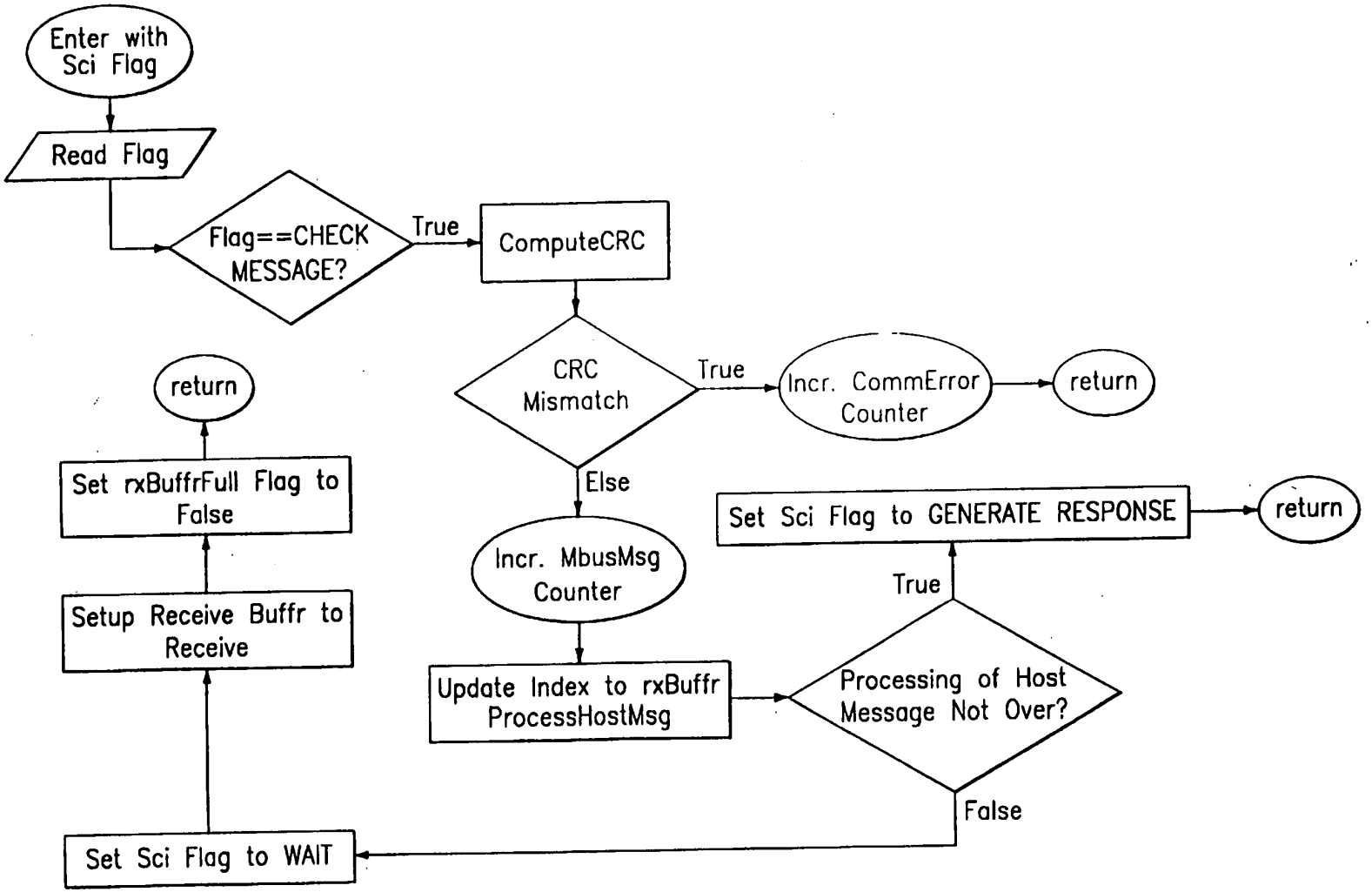

Enter with Sci Flag
Read Flag
Flag==CHECK MESSAGE?
True
ComputeCRC
CRC Mismatch
True
Incr. CommError Counter
return
Else
Incr. MbusMsg Counter
Update Index to rxBuffr ProcessHostMsg
Processing of Host Message Not Over?
True
Set Sci Flag to GENERATE RESPONSE
return
False
Set Sci Flag to WAIT
Setup Receive Buffr to Receive
Set rxBuffrFull Flag to False
return

FIG. 87

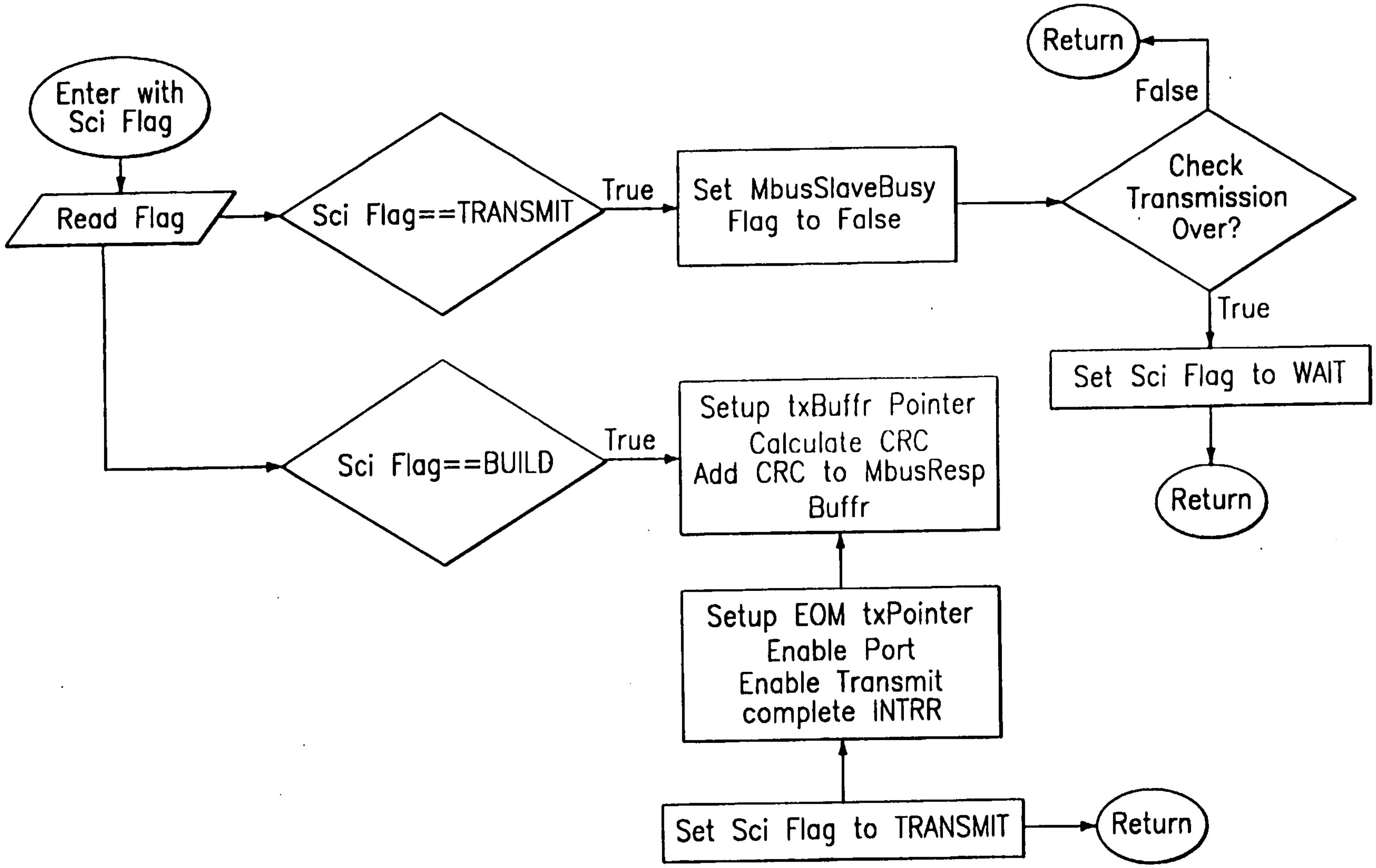


FIG. 88

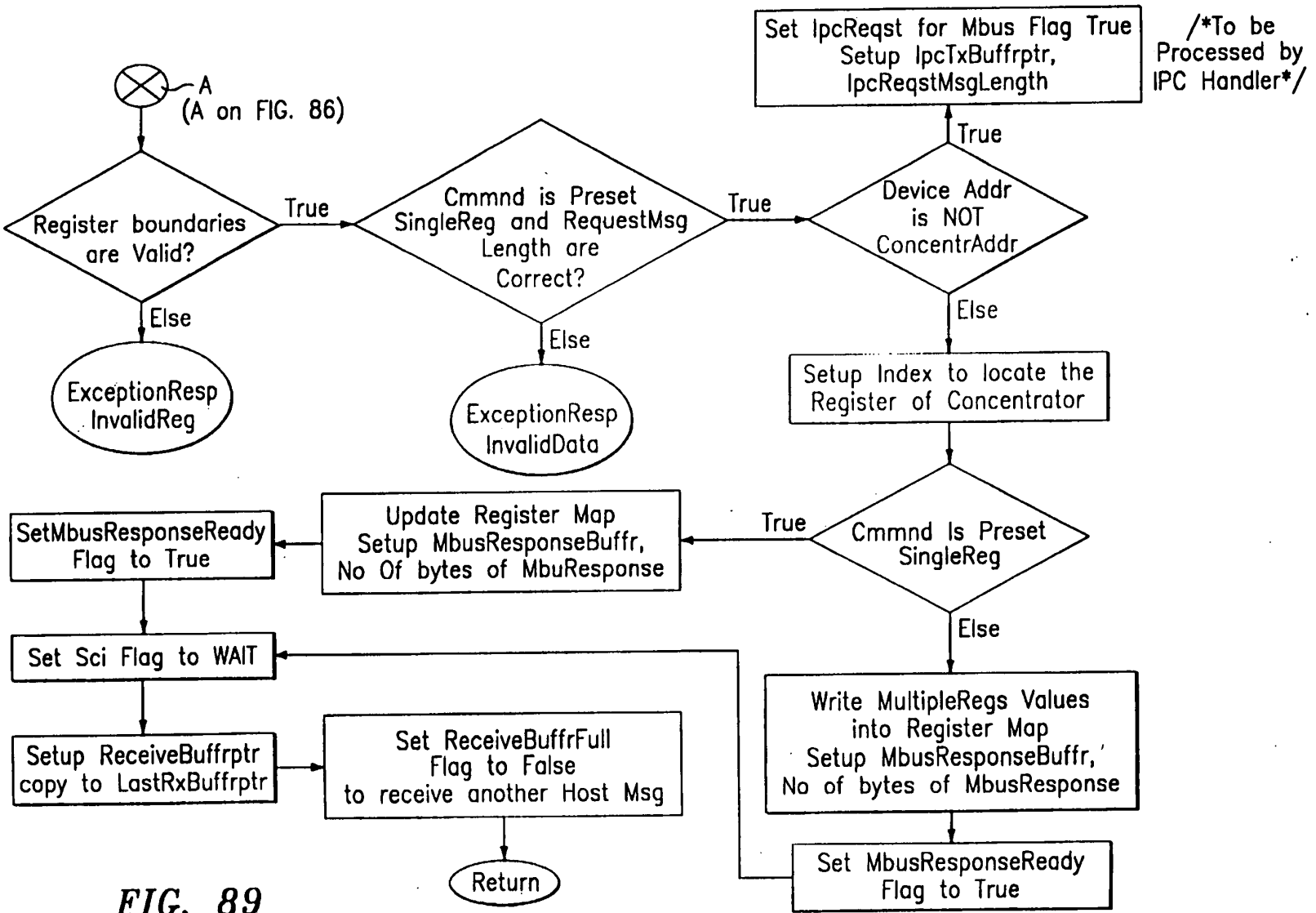

A
(A on FIG. 86)
Register boundaries are Valid?
True
Else
ExceptionResp InvalidReg
Cmmnd is Preset SingleReg and RequestMsg Length are Correct?
True
Else
ExceptionResp InvalidData
Device Addr is NOT ConcentrAddr
True
Else
Set IpcReqst for Mbus Flag True
Setup IpcTxBuffrptr,
IpcReqstMsgLength
/*To be Processed by IPC Handler*/
Setup Index to locate the Register of Concentrator
Cmmnd Is Preset SingleReg
True
Else
Update Register Map
Setup MbusResponseBuffr,
No Of bytes of MbuResponse
SetMbusResponseReady Flag to True
Write MultipleRegs Values into Register Map
Setup MbusResponseBuffr,
No of bytes of MbusResponse
Set MbusResponseReady Flag to True
Set Sci Flag to WAIT
Setup ReceiveBuffrptr copy to LastRxBuffrptr
Set ReceiveBuffrFull Flag to False
to receive another Host Msg
Return

FIG. 89

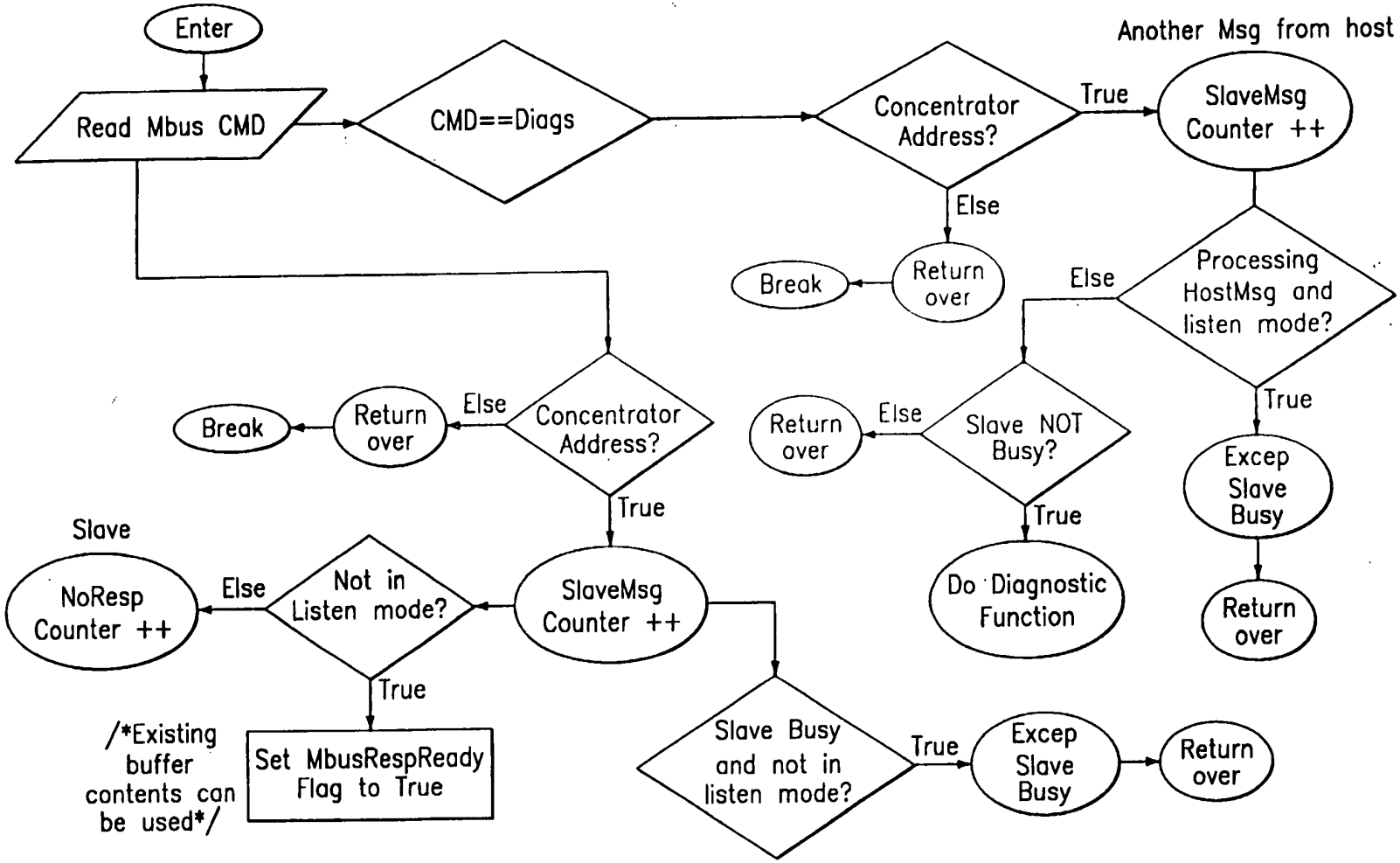


FIG. 90

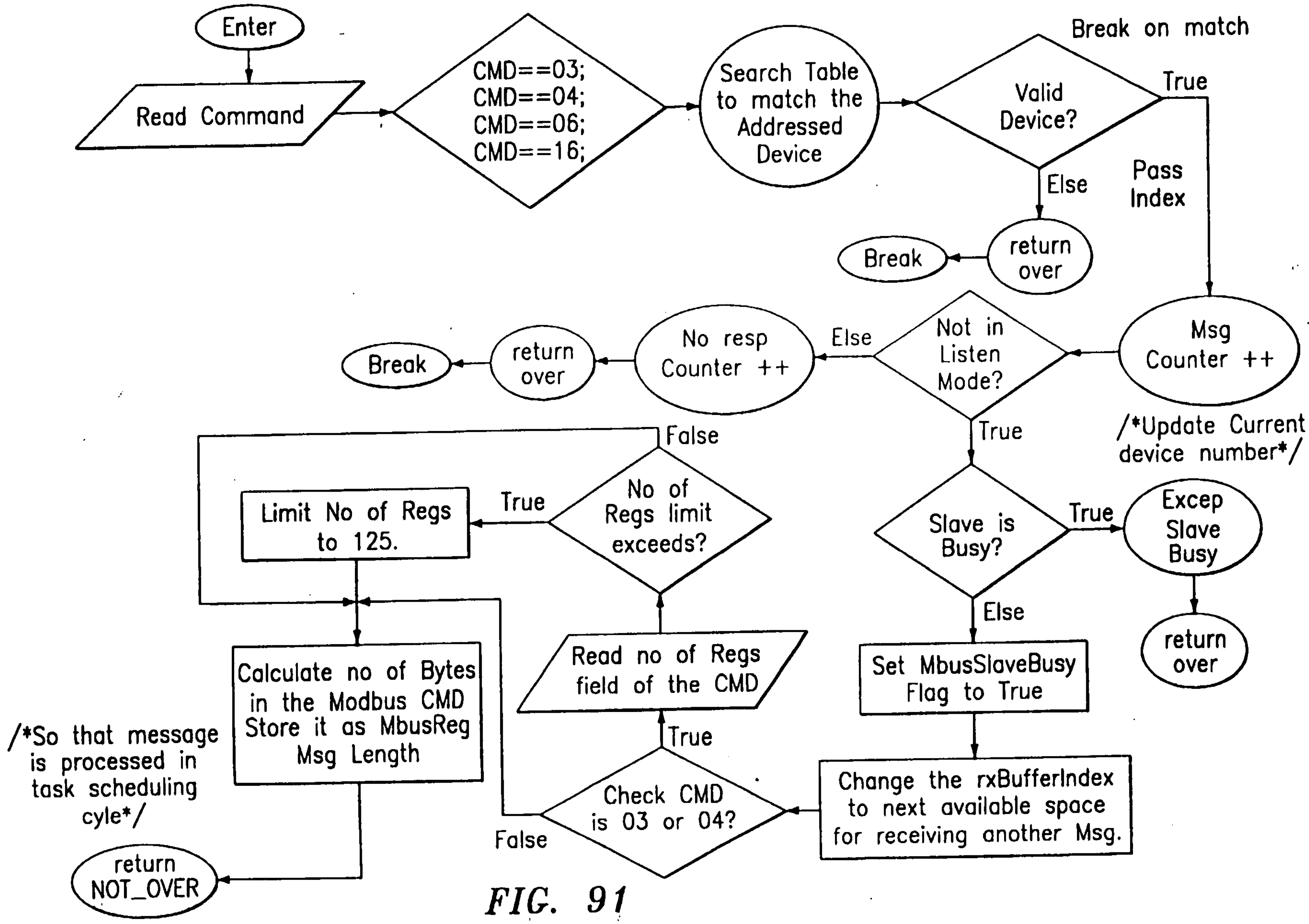

Enter
Read Command
CMD==03;
CMD==04;
CMD==06;
CMD==16;
Search Table to match the Addressed Device
Valid Device?
Break on match
True
Else
Pass Index
return over
Break
Msg Counter ++
/*Update Current device number*/
Not in Listen Mode?
Else
No resp Counter ++
return over
Break
True
Slave is Busy?
True
Excep Slave Busy
return over
Else
Set MbusSlaveBusy Flag to True
Change the rxBufferIndex to next available space for receiving another Msg.
Check CMD is 03 or 04?
True
False
Read no of Regs field of the CMD
No of Regs limit exceeds?
True
False
Limit No of Regs to 125.
Calculate no of Bytes in the Modbus CMD Store it as MbusReg Msg Length
/*So that message is processed in task scheduling cyle*/
return NOT_OVER

FIG. 91

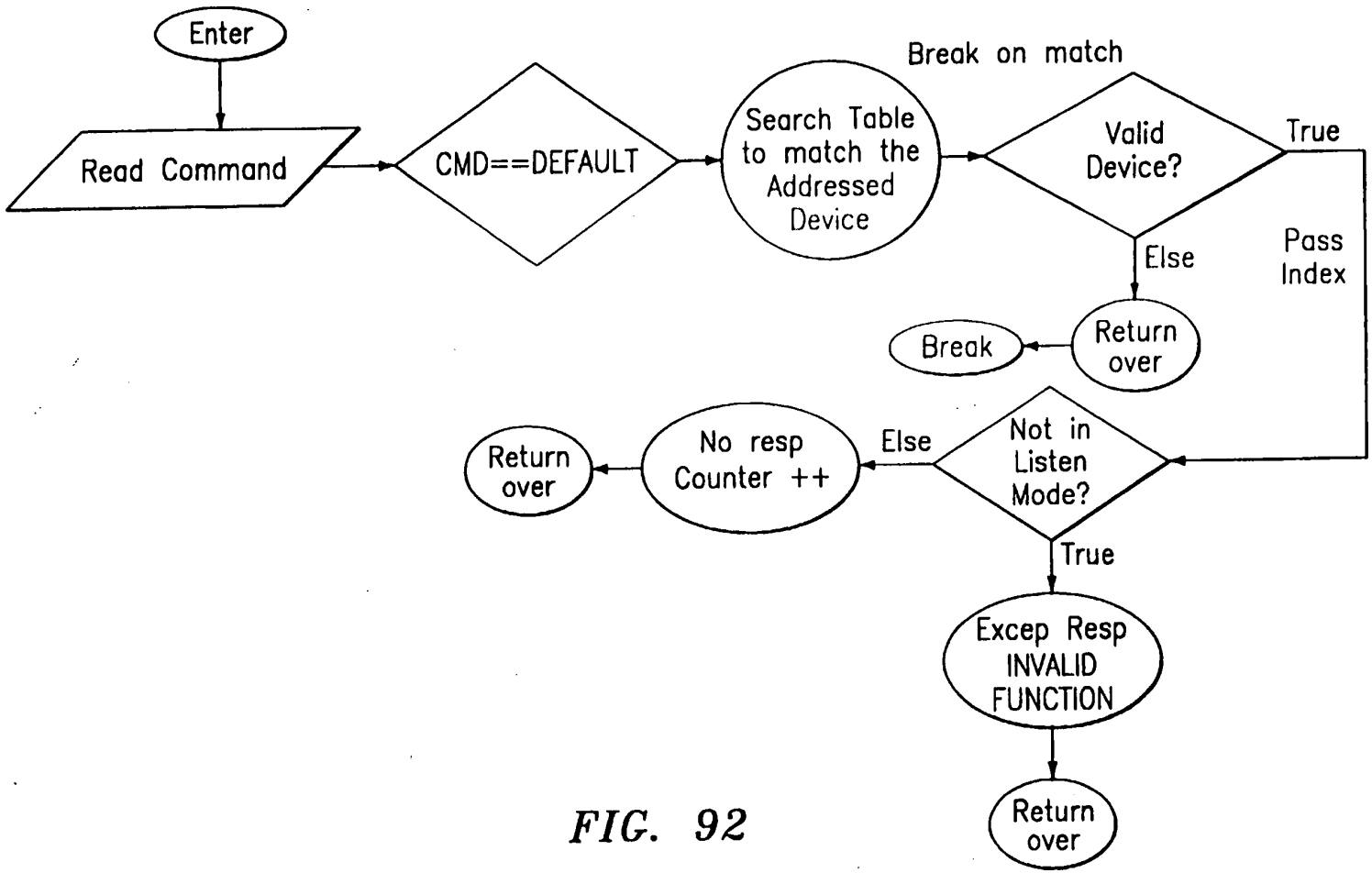

Enter
Read Command
CMD==DEFAULT
Search Table to match the Addressed Device
Break on match
Valid Device?
True
Pass Index
Else
Return over
Break
Not in Listen Mode?
Else
No resp Counter ++
Return over
True
Excep Resp INVALID FUNCTION
Return over

FIG. 92

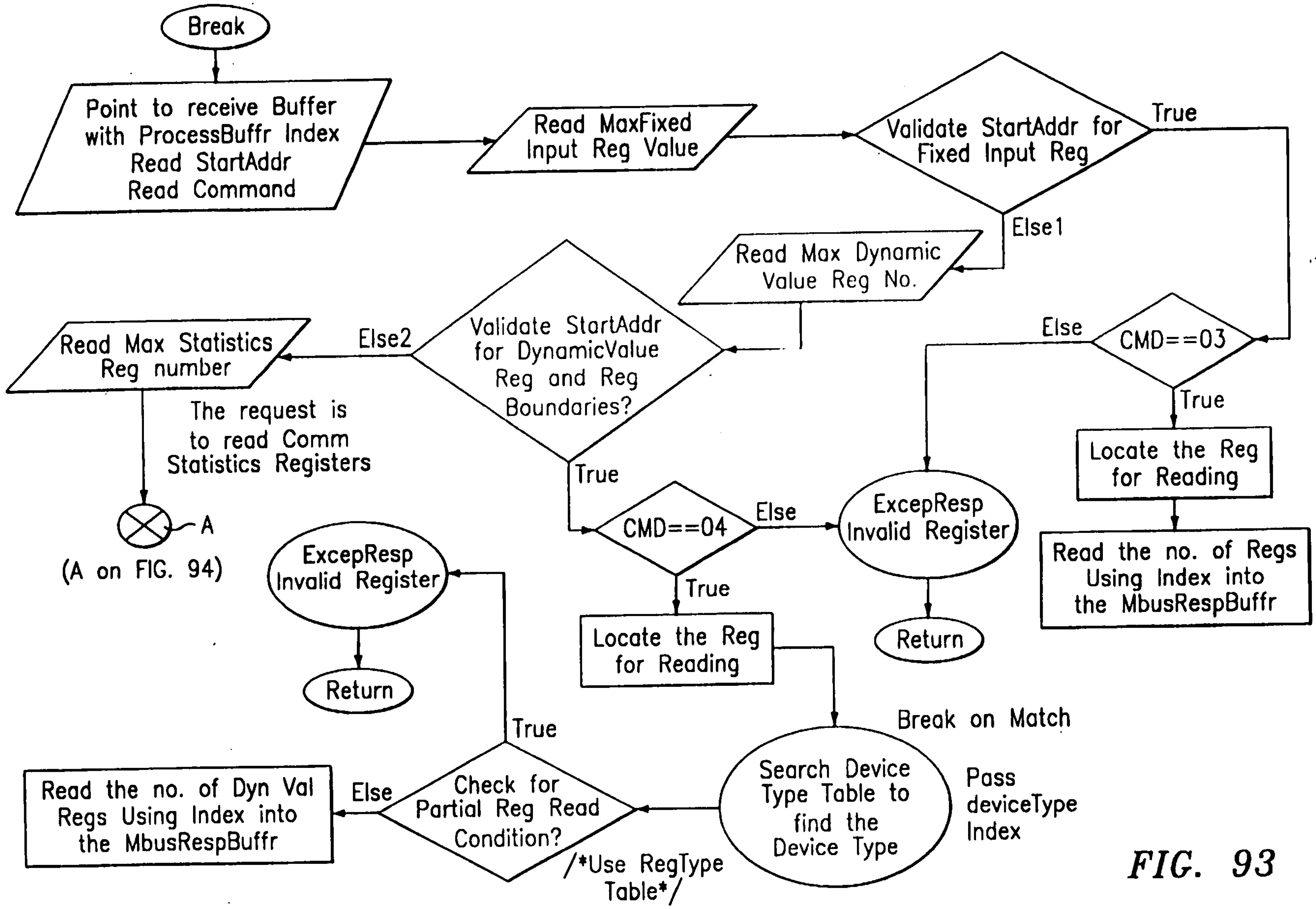


FIG. 93

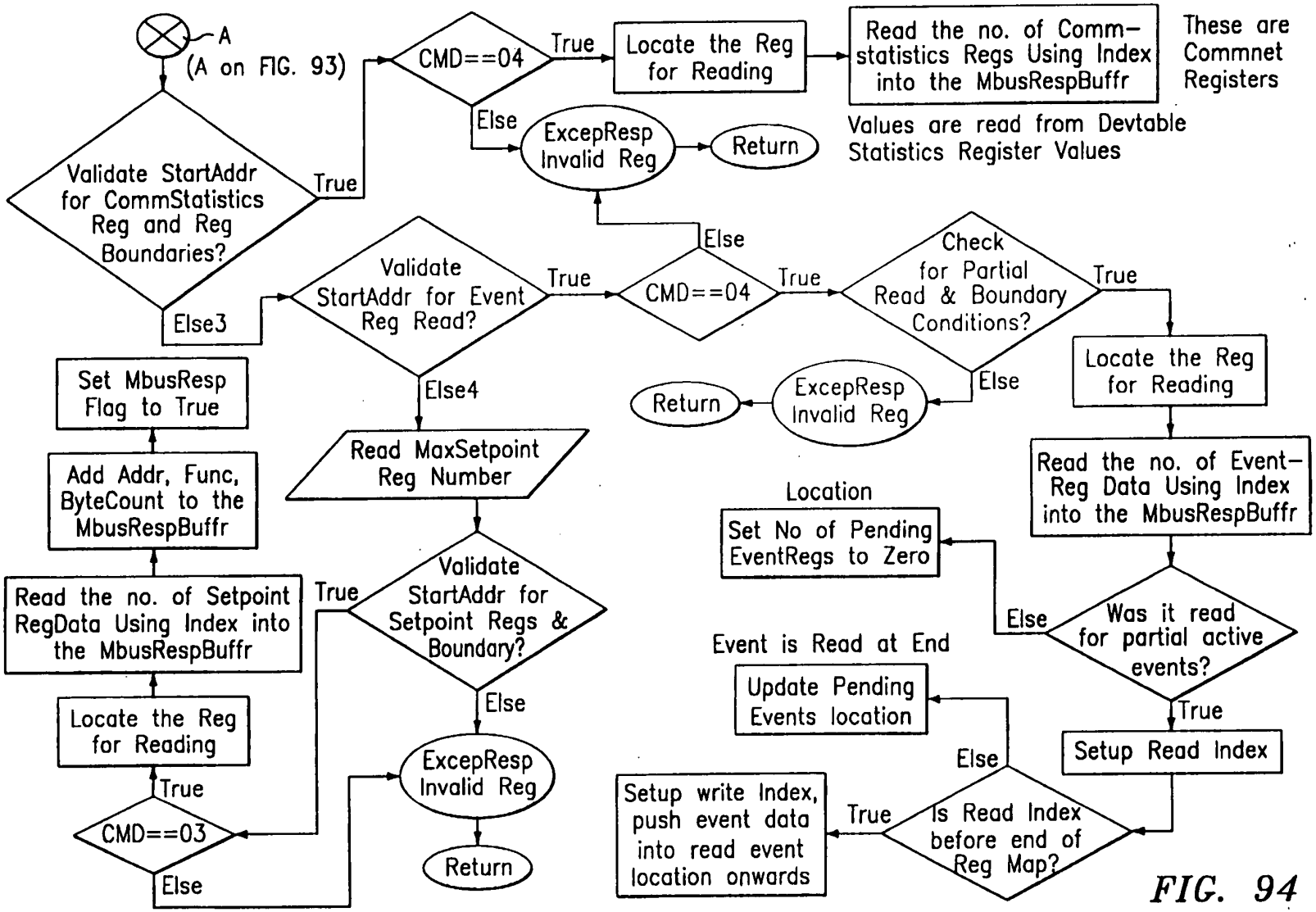


FIG. 94

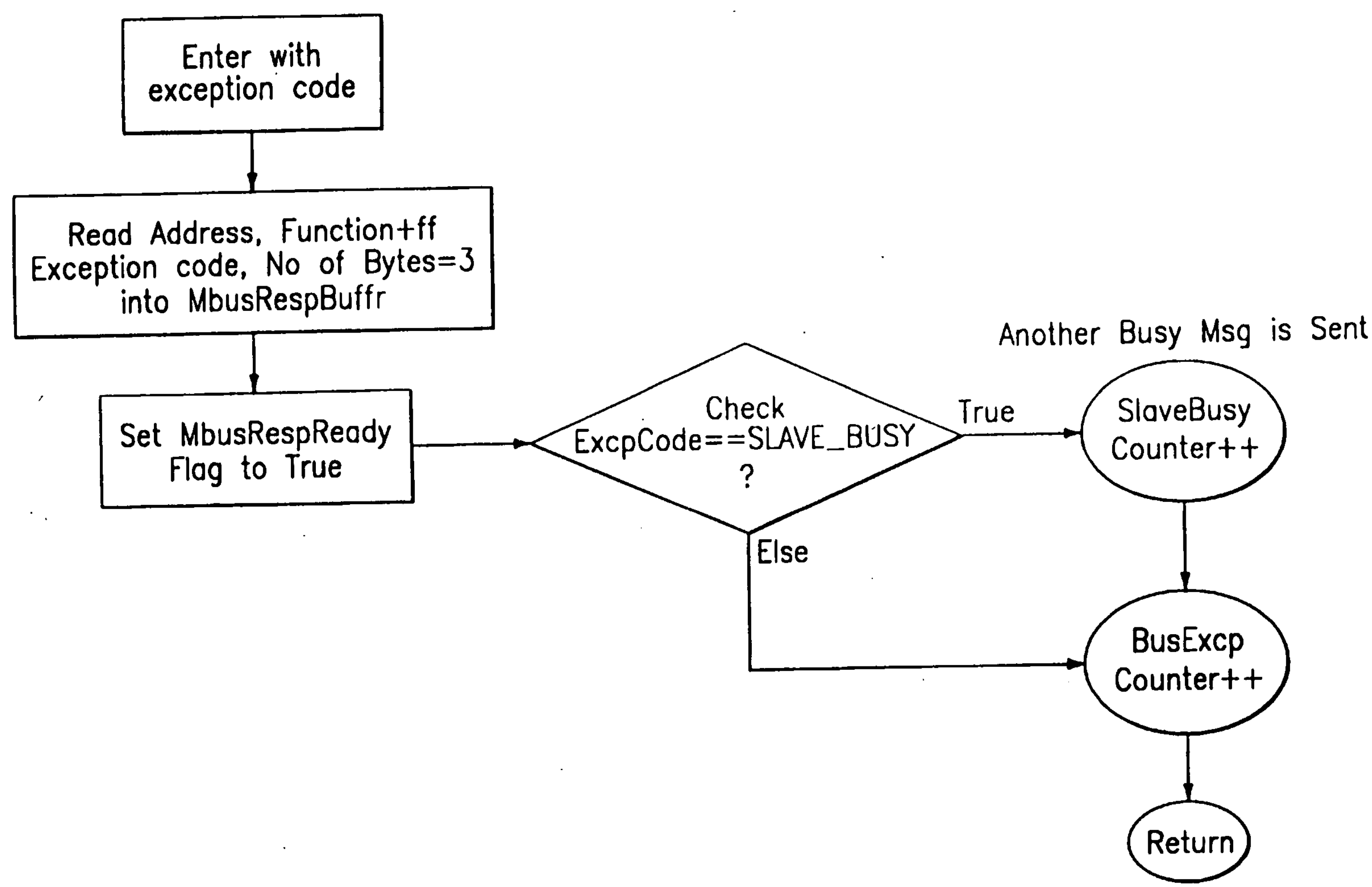

Enter with exception code
Read Address, Function+ff Exception code, No of Bytes=3 into MbusRespBuffr
Set MbusRespReady Flag to True
Check ExcpCode==SLAVE_BUSY ?
True
Else
Another Busy Msg is Sent
SlaveBusy Counter++
BusExcp Counter++
Return

FIG. 95

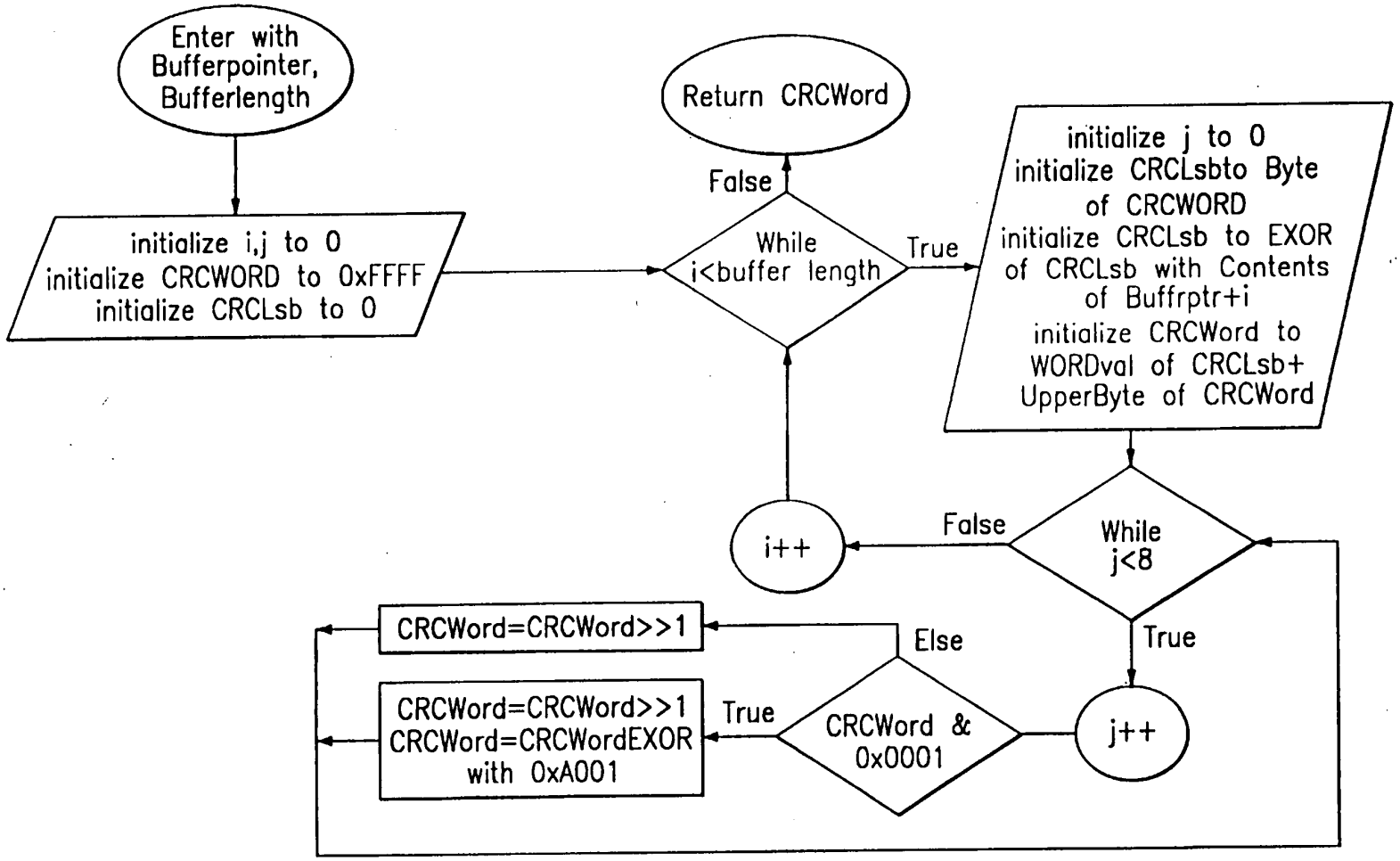

Enter with Bufferpointer, Bufferlength
initialize i,j to 0
initialize CRCWORD to 0xFFFF
initialize CRCLsb to 0
While i<buffer length
False
Return CRCWord
True
initialize j to 0
initialize CRCLsbto Byte of CRCWORD
initialize CRCLsb to EXOR of CRCLsb with Contents of Buffrptr+i
initialize CRCWord to WORDval of CRCLsb+ UpperByte of CRCWord
While j<8
False
i++
True
CRCWord & 0x0001
True
CRCWord=CRCWord>>1 CRCWord=CRCWordEXOR with 0xA001
Else
CRCWord=CRCWord>>1
j++

FIG. 96

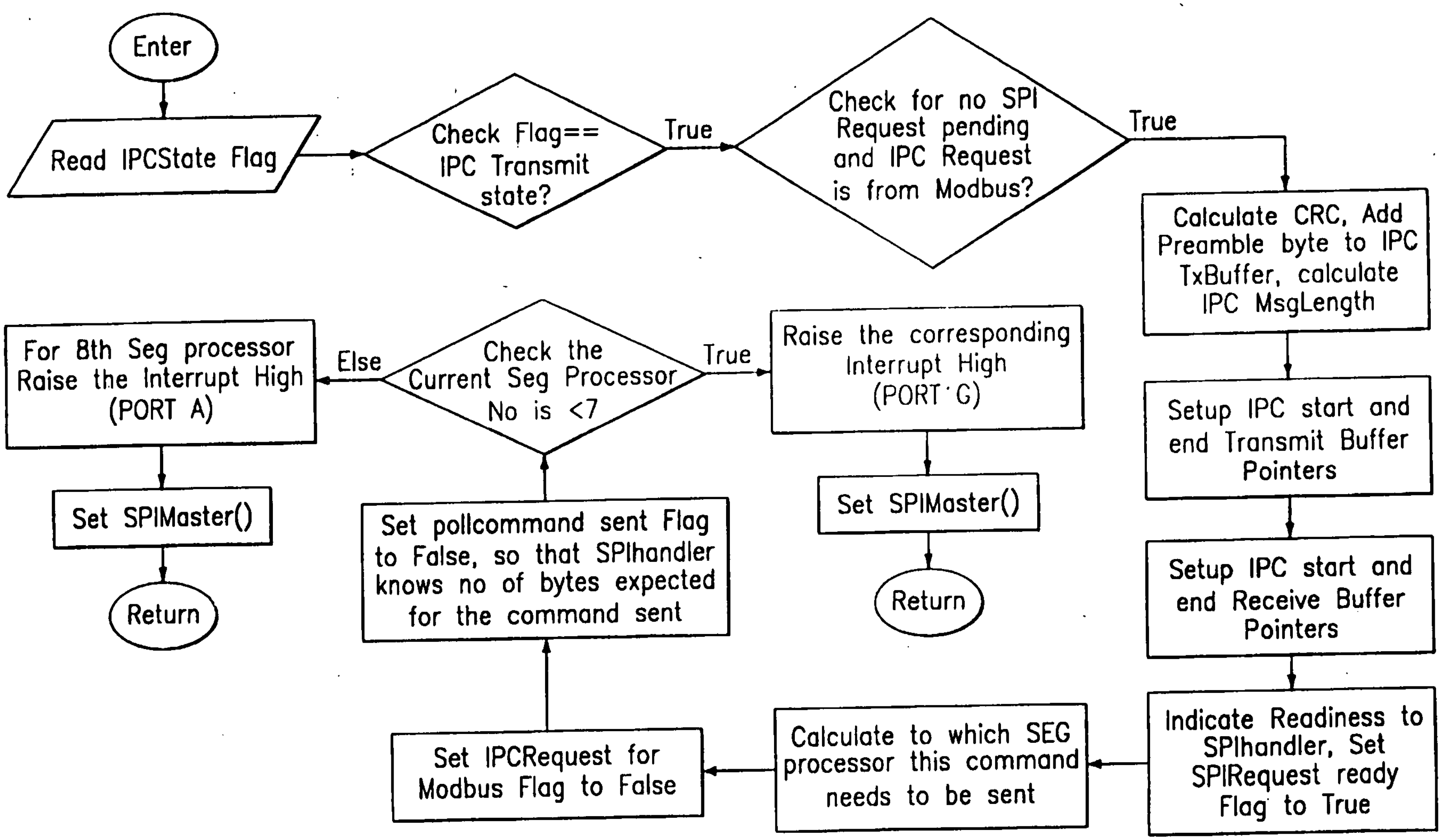


FIG. 97

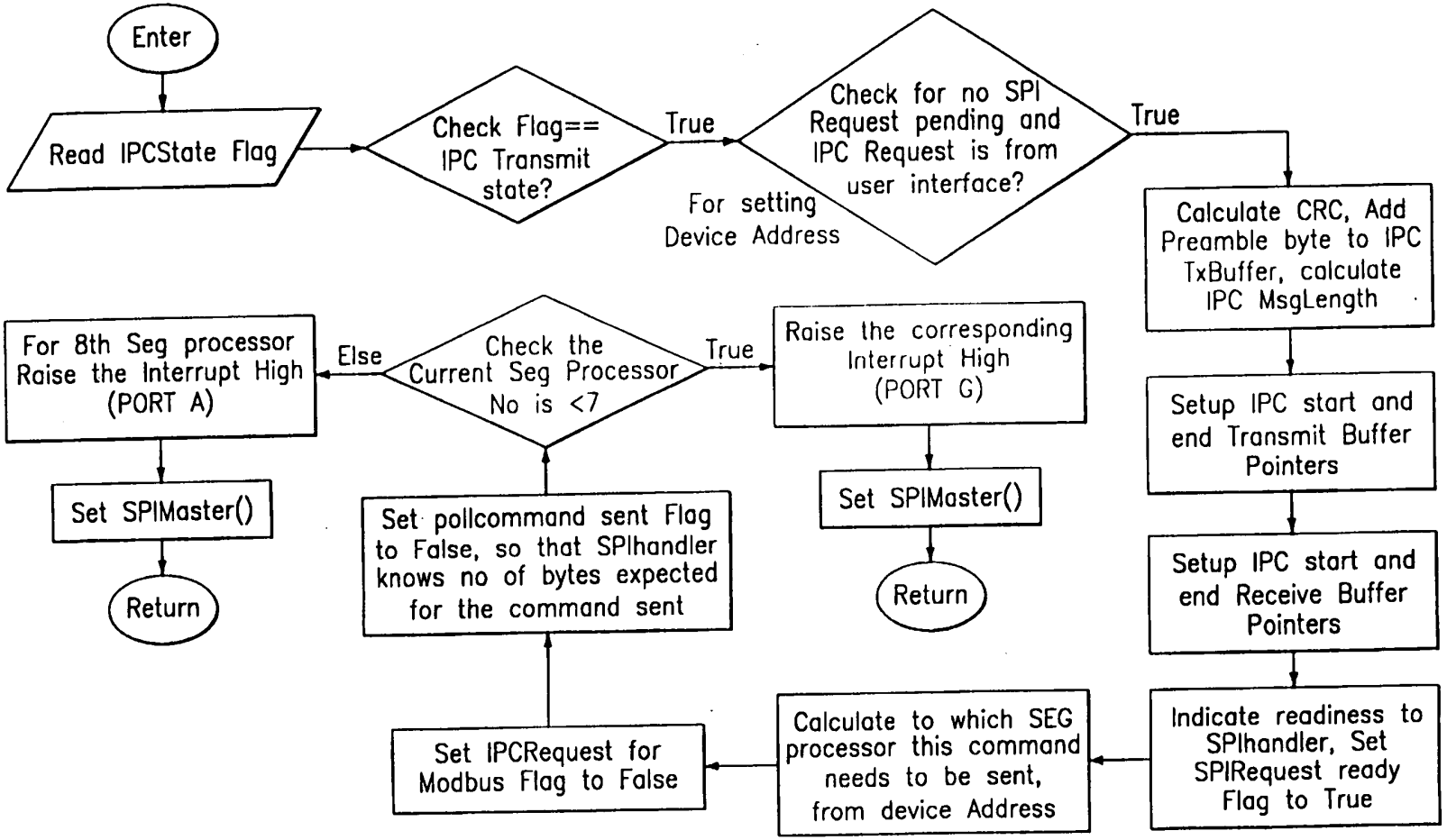

Enter
Read IPCState Flag
Check Flag== IPC Transmit state?
True
Check for no SPI Request pending and IPC Request is from user interface?
For setting Device Address
True
Calculate CRC, Add Preamble byte to IPC TxBuffer, calculate IPC MsgLength
Setup IPC start and end Transmit Buffer Pointers
Setup IPC start and end Receive Buffer Pointers
Indicate readiness to SPIhandler, Set SPIRequest ready Flag to True
Calculate to which SEG processor this command needs to be sent, from device Address
Set IPCRequest for Modbus Flag to False
Set pollcommand sent Flag to False, so that SPIhandler knows no of bytes expected for the command sent
Check the Current Seg Processor No is <7
Else
For 8th Seg processor Raise the Interrupt High (PORT A)
Set SPIMaster()
Return
True
Raise the corresponding Interrupt High (PORT G)
Set SPIMaster()
Return

FIG. 98

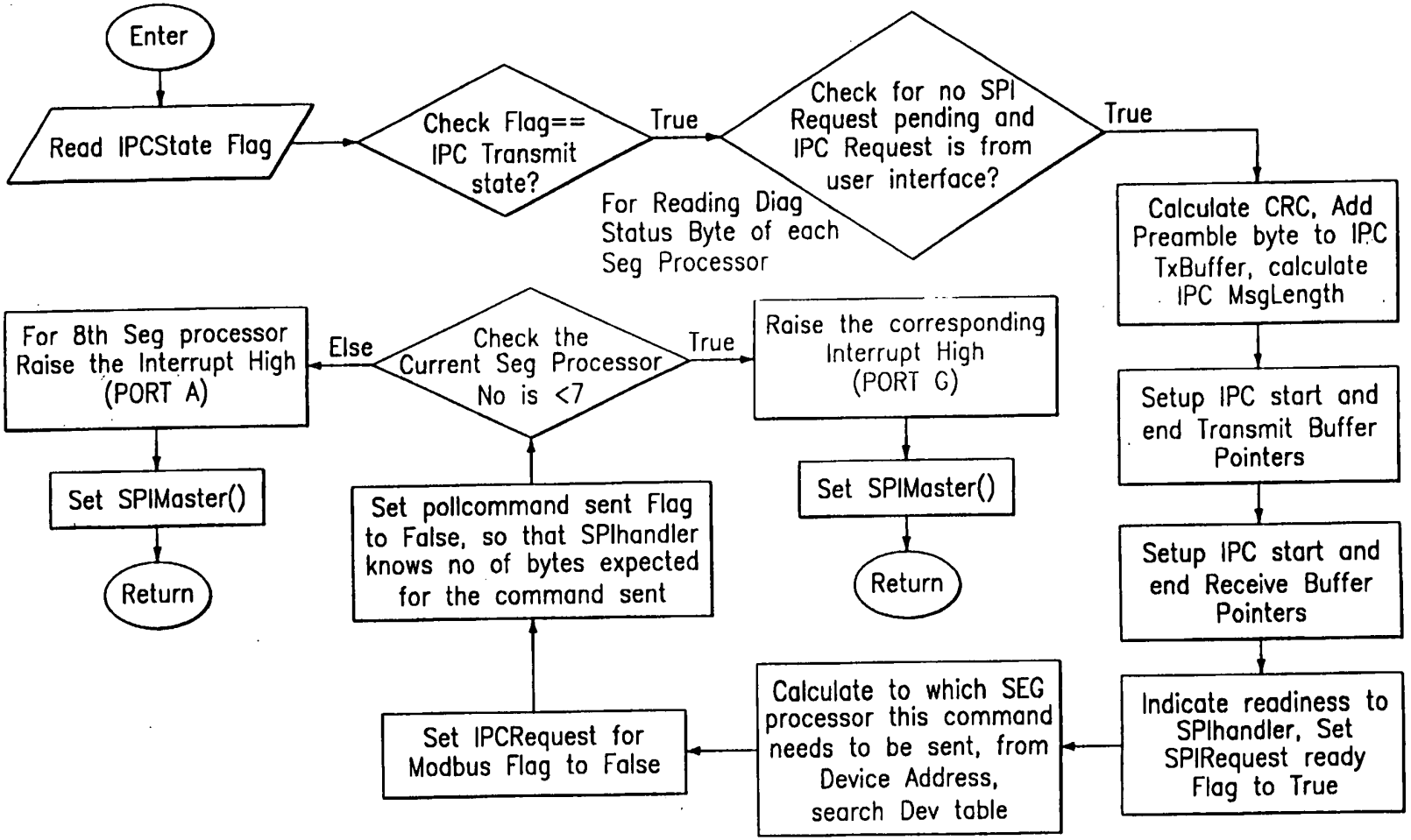

Enter
Read IPCState Flag
Check Flag== IPC Transmit state?
True
Check for no SPI Request pending and IPC Request is from user interface?
True
For Reading Diag Status Byte of each Seg Processor
Calculate CRC, Add Preamble byte to IPC TxBuffer, calculate IPC MsgLength
Setup IPC start and end Transmit Buffer Pointers
Setup IPC start and end Receive Buffer Pointers
Indicate readiness to SPIhandler, Set SPIRequest ready Flag to True
Calculate to which SEG processor this command needs to be sent, from Device Address, search Dev table
Set IPCRequest for Modbus Flag to False
Set pollcommand sent Flag to False, so that SPIhandler knows no of bytes expected for the command sent
Check the Current Seg Processor No is <7
Else
True
For 8th Seg processor Raise the Interrupt High (PORT A)
Raise the corresponding Interrupt High (PORT G)
Set SPIMaster()
Set SPIMaster()
Return
Return

FIG. 99

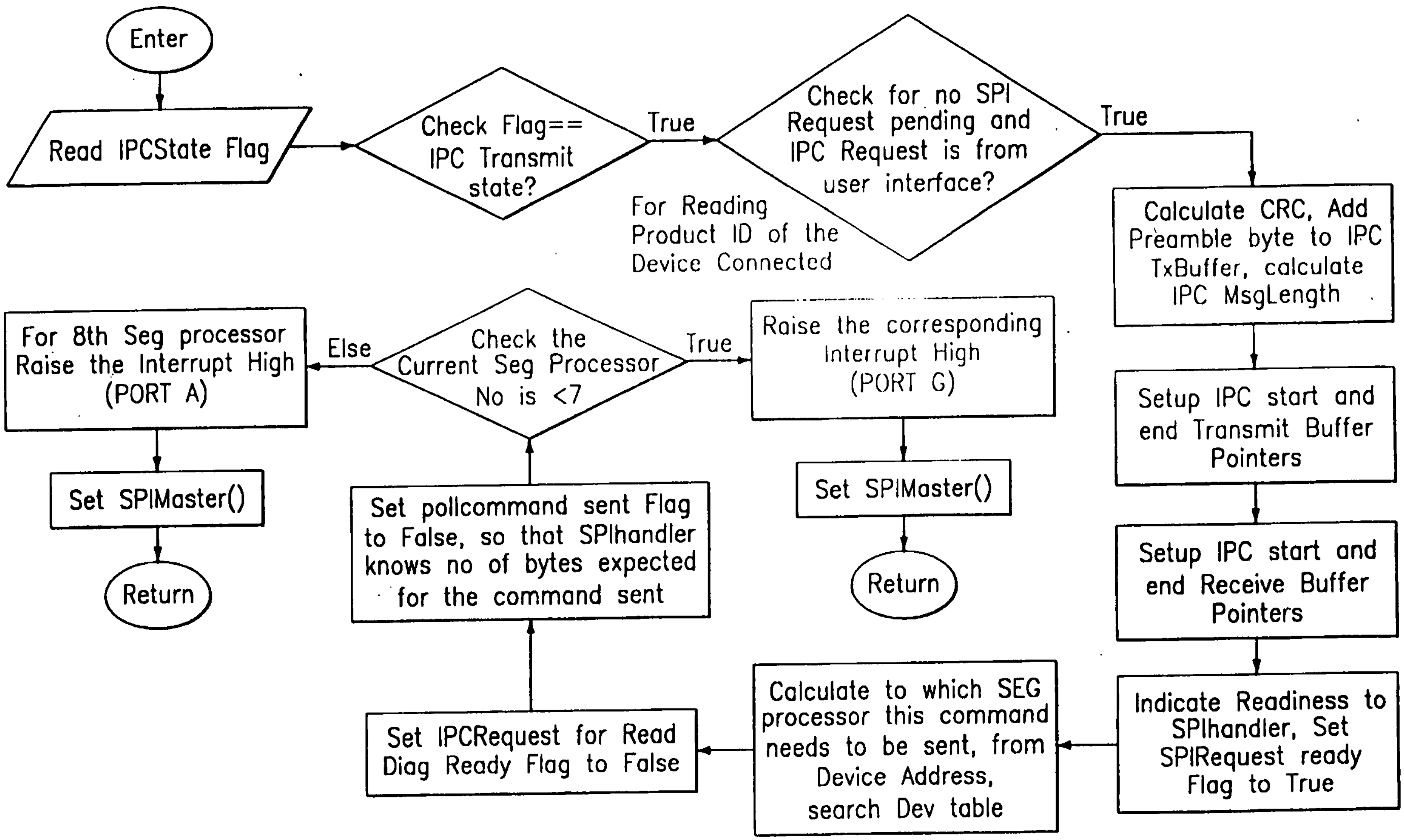

Enter
Read IPCState Flag
Check Flag== IPC Transmit state?
True
Check for no SPI Request pending and IPC Request is from user interface?
For Reading Product ID of the Device Connected
True
Calculate CRC, Add Preamble byte to IPC TxBuffer, calculate IPC MsgLength
Setup IPC start and end Transmit Buffer Pointers
Setup IPC start and end Receive Buffer Pointers
Indicate Readiness to SPIhandler, Set SPIRequest ready Flag to True
Calculate to which SEG processor this command needs to be sent, from Device Address, search Dev table
Set IPCRequest for Read Diag Ready Flag to False
Set pollcommand sent Flag to False, so that SPIhandler knows no of bytes expected for the command sent
Check the Current Seg Processor No is <7
True
Raise the corresponding Interrupt High (PORT G)
Set SPIMaster()
Return
Else
For 8th Seg processor Raise the Interrupt High (PORT A)
Set SPIMaster()
Return

FIG. 100

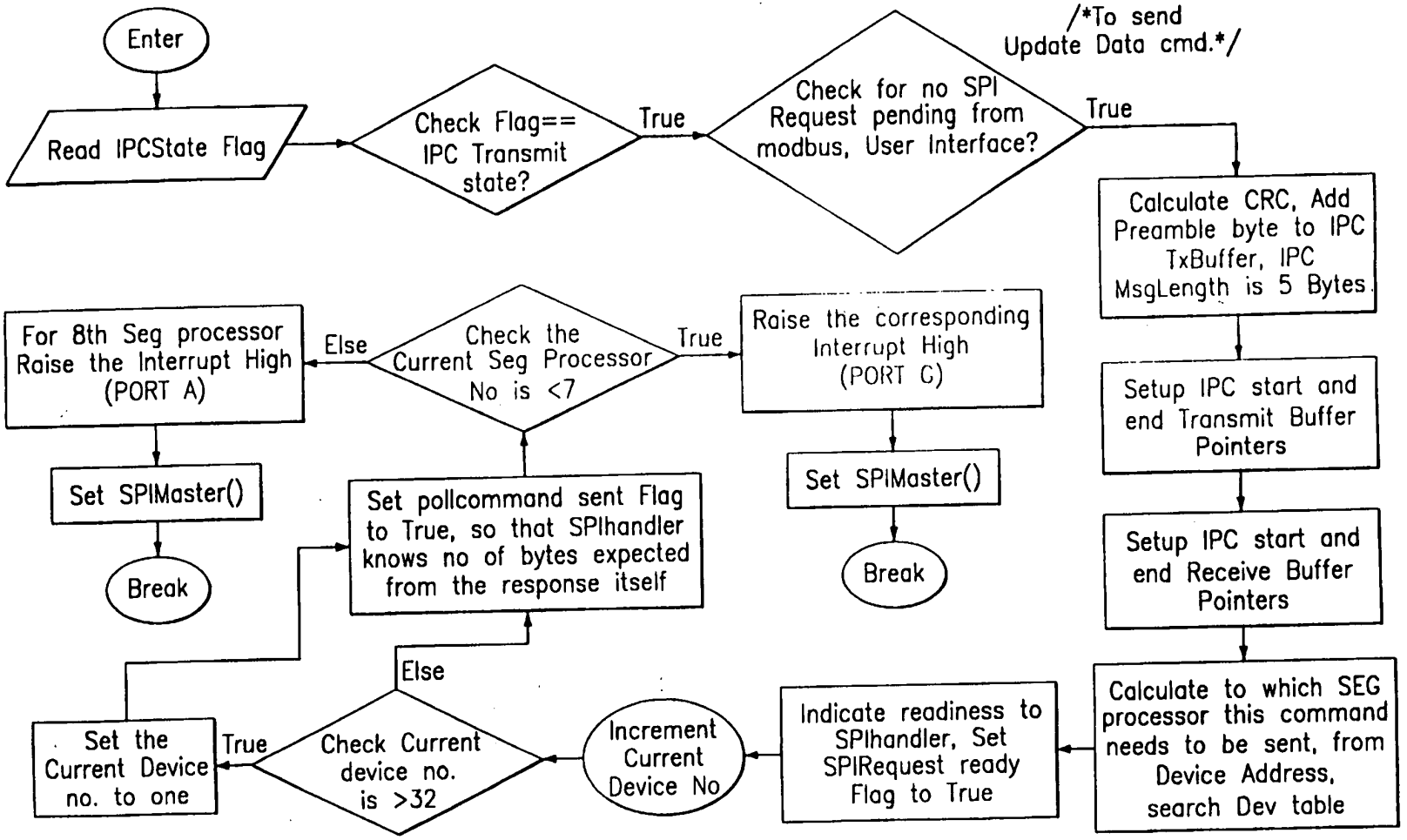


FIG. 101

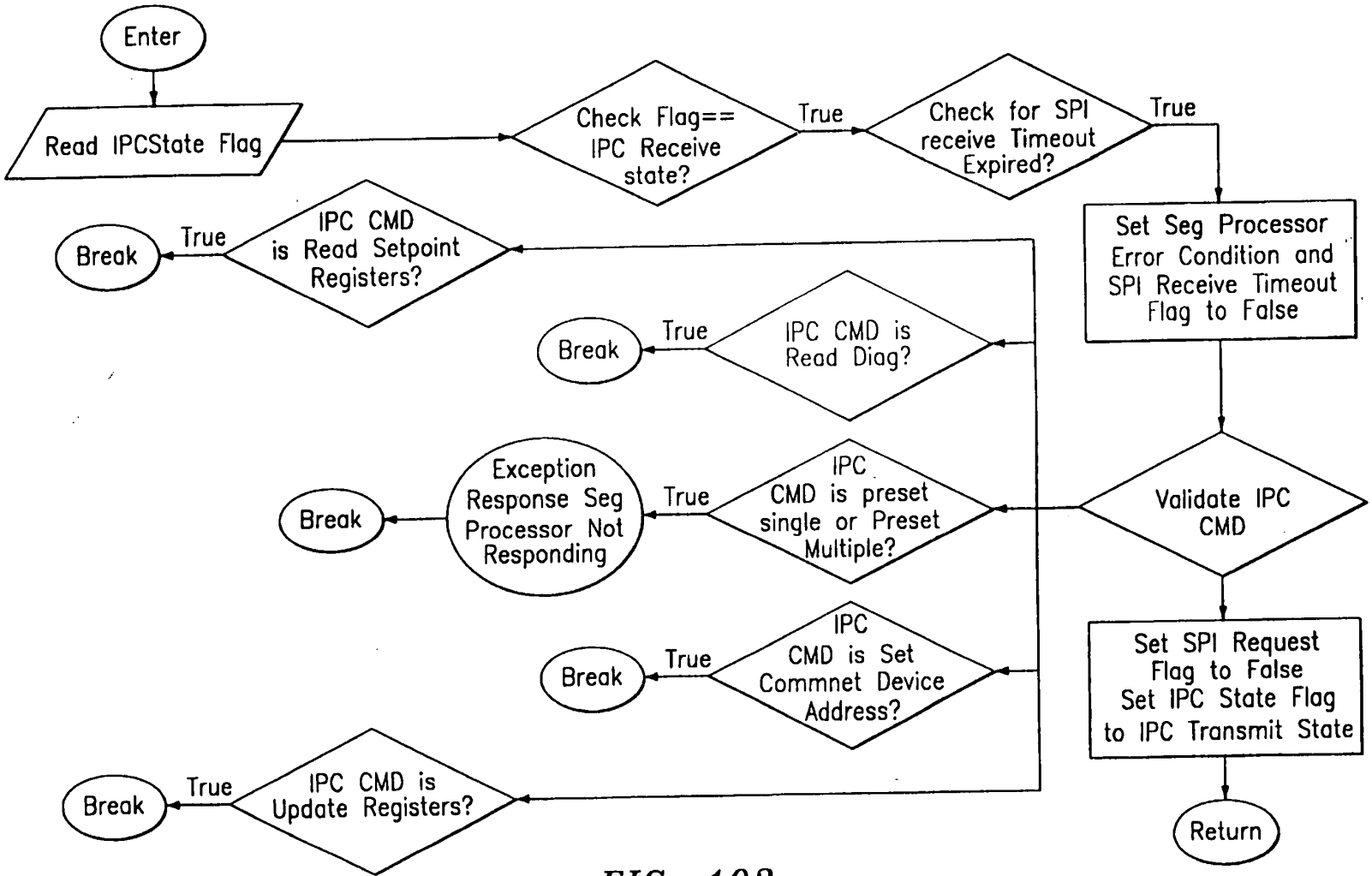

Enter
Read IPCState Flag
Check Flag== IPC Receive state?
True
Check for SPI receive Timeout Expired?
True
Set Seg Processor Error Condition and SPI Receive Timeout Flag to False
Validate IPC CMD
IPC CMD is Read Setpoint Registers?
True
Break
IPC CMD is Read Diag?
True
Break
IPC CMD is preset single or Preset Multiple?
True
Exception Response Seg Processor Not Responding
Break
IPC CMD is Set Commnet Device Address?
True
Break
IPC CMD is Update Registers?
True
Break
Set SPI Request Flag to False
Set IPC State Flag to IPC Transmit State
Return

FIG. 102

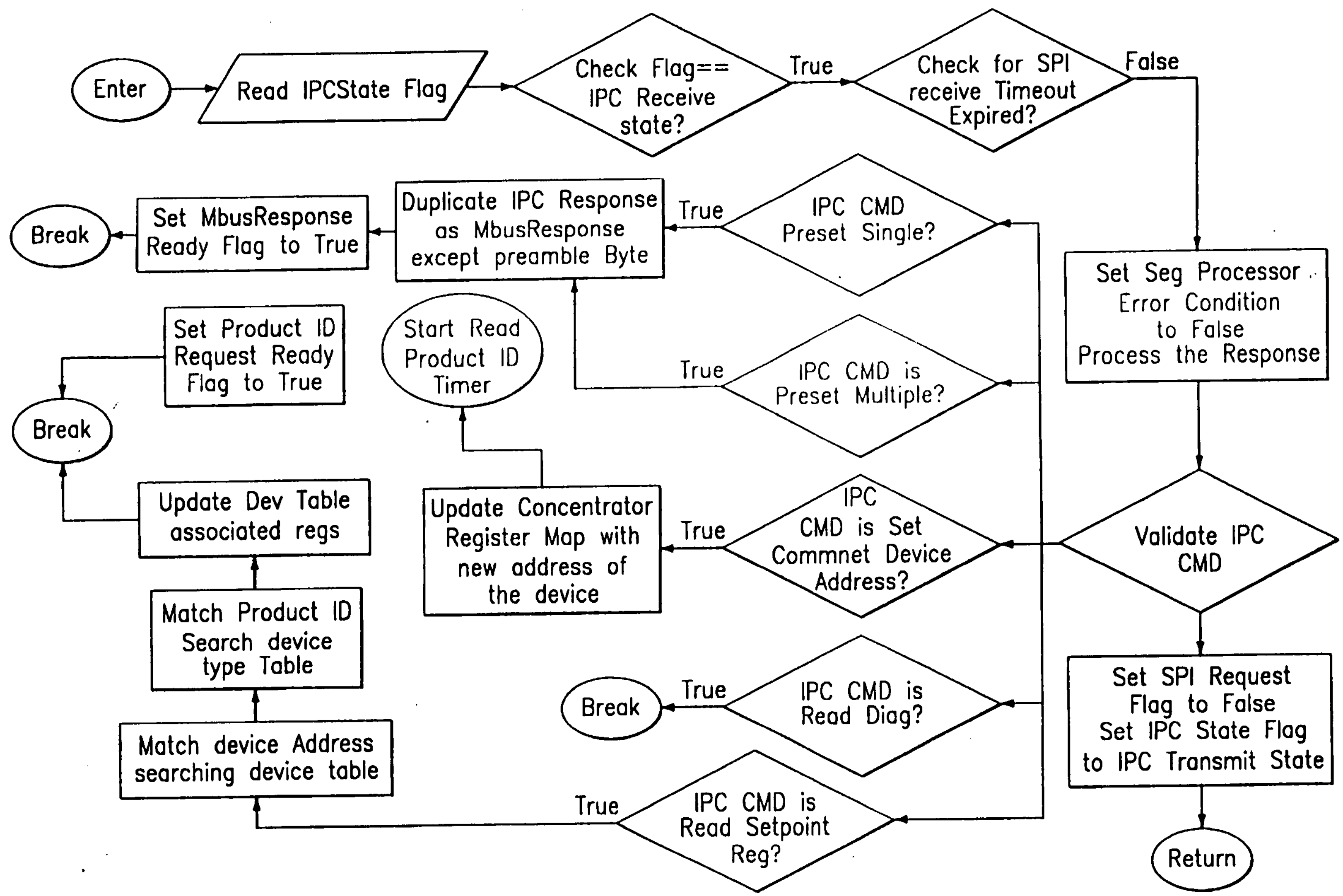

Enter
Read IPCState Flag
Check Flag== IPC Receive state?
True
Check for SPI receive Timeout Expired?
False
Set Seg Processor Error Condition to False Process the Response
Validate IPC CMD
Set SPI Request Flag to False Set IPC State Flag to IPC Transmit State
Return
IPC CMD Preset Single?
True
Duplicate IPC Response as MbusResponse except preamble Byte
Set MbusResponse Ready Flag to True
Break
IPC CMD is Preset Multiple?
True
IPC CMD is Set Commnet Device Address?
True
Update Concentrator Register Map with new address of the device
Start Read Product ID Timer
Set Product ID Request Ready Flag to True
Break
IPC CMD is Read Diag?
True
Break
IPC CMD is Read Setpoint Reg?
True
Match device Address searching device table
Match Product ID Search device type Table
Update Dev Table associated regs

FIG. 103

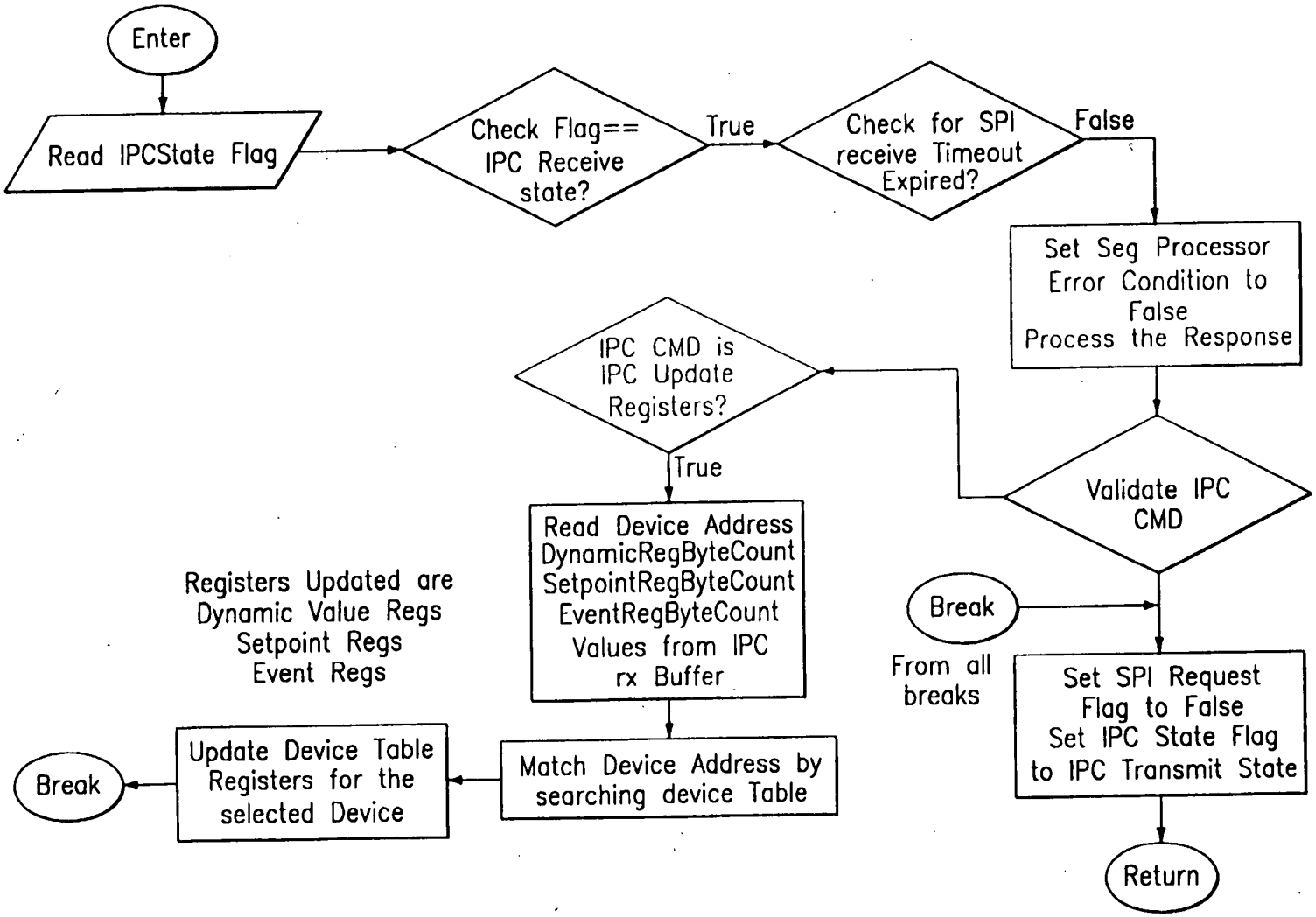


FIG. 104

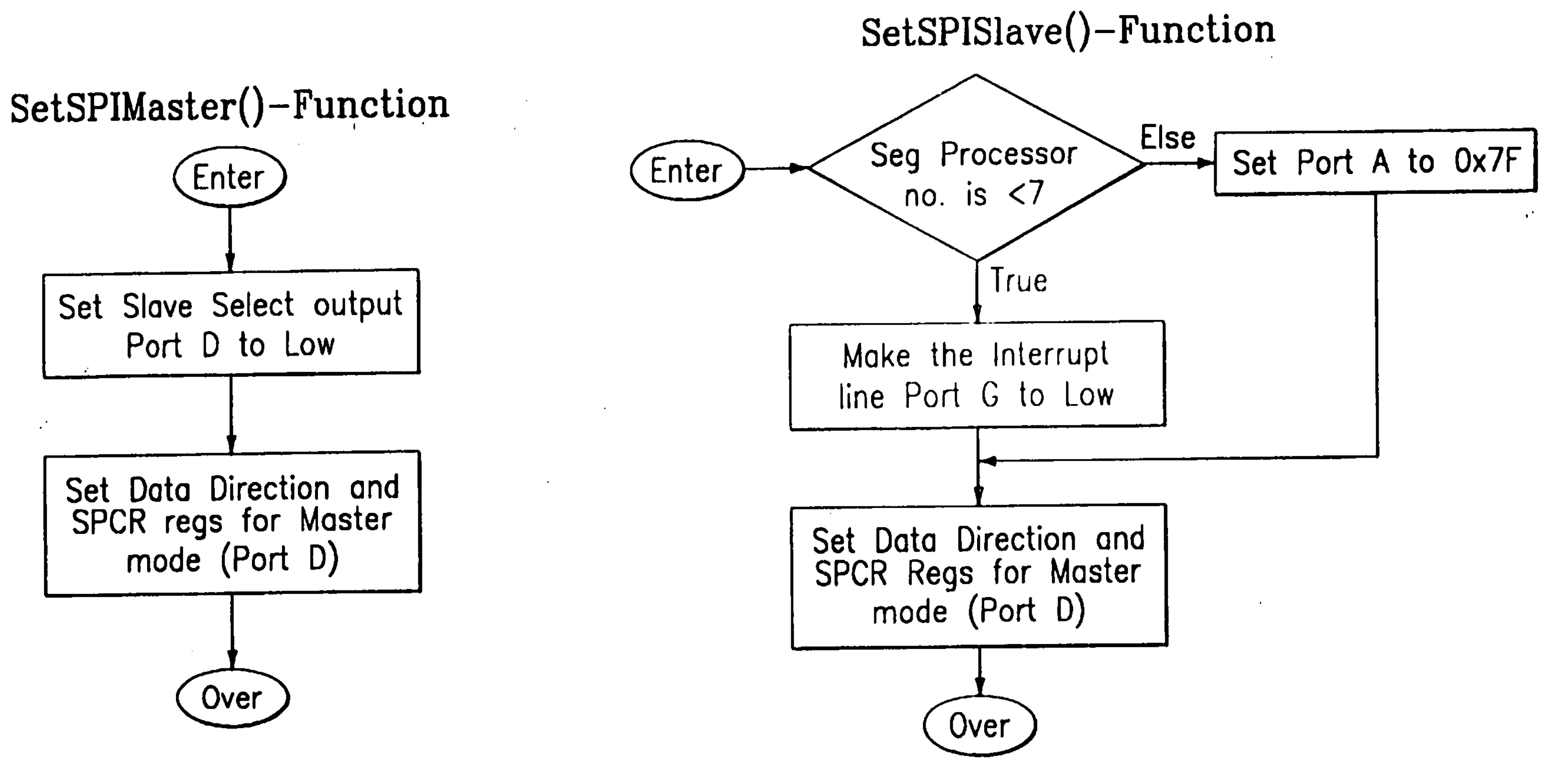

SetSPIMaster()-Function
Enter
Set Slave Select output Port D to Low
Set Data Direction and SPCR regs for Master mode (Port D)
Over
SetSPISlave()-Function
Enter
Seg Processor no. is <7
Else
Set Port A to 0x7F
True
Make the Interrupt line Port G to Low
Set Data Direction and SPCR Regs for Master mode (Port D)
Over

FIG. 105

SendReqForProductId()–Function

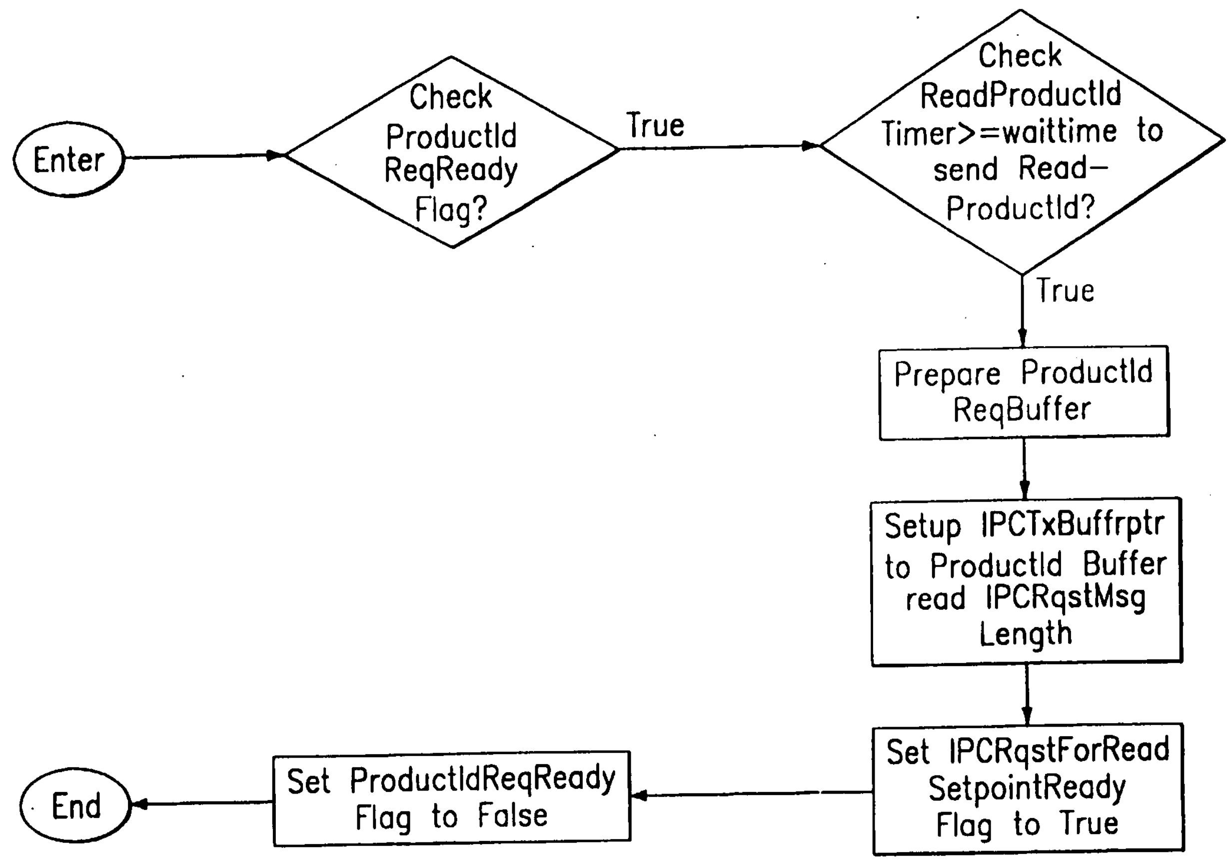


FIG. 106

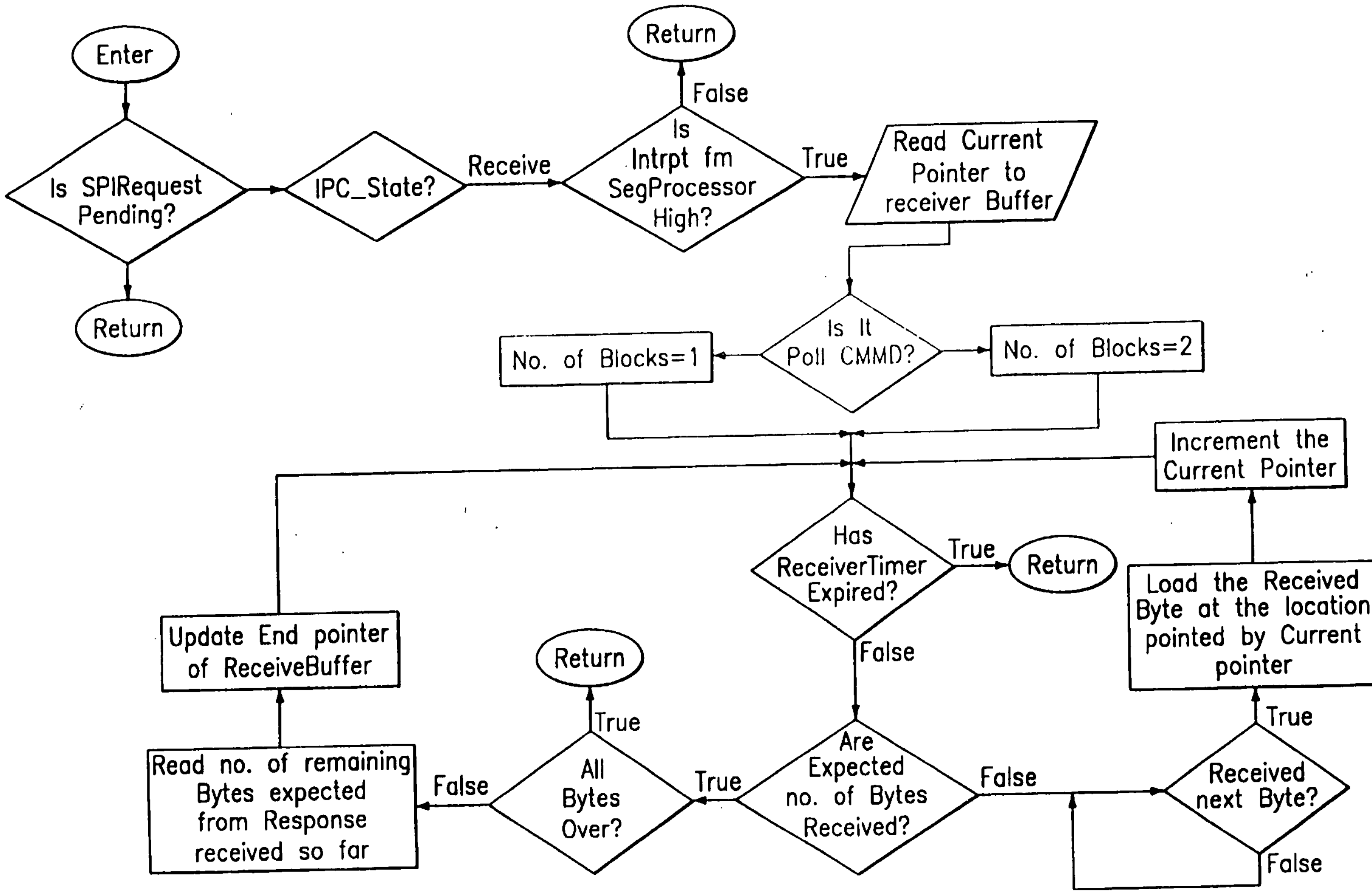

Enter
Is SPIRequest Pending?
Return
IPC_State?
Receive
Is Intrpt fm SegProcessor High?
False
Return
True
Read Current Pointer to receiver Buffer
Is It Poll CMMD?
No. of Blocks=1
No. of Blocks=2
Increment the Current Pointer
Has ReceiverTimer Expired?
True
Return
False
Load the Received Byte at the location pointed by Current pointer
Update End pointer of ReceiveBuffer
Return
True
All Bytes Over?
True
Are Expected no. of Bytes Received?
False
Received next Byte?
True
False
False
Read no. of remaining Bytes expected from Response received so far

FIG. 107

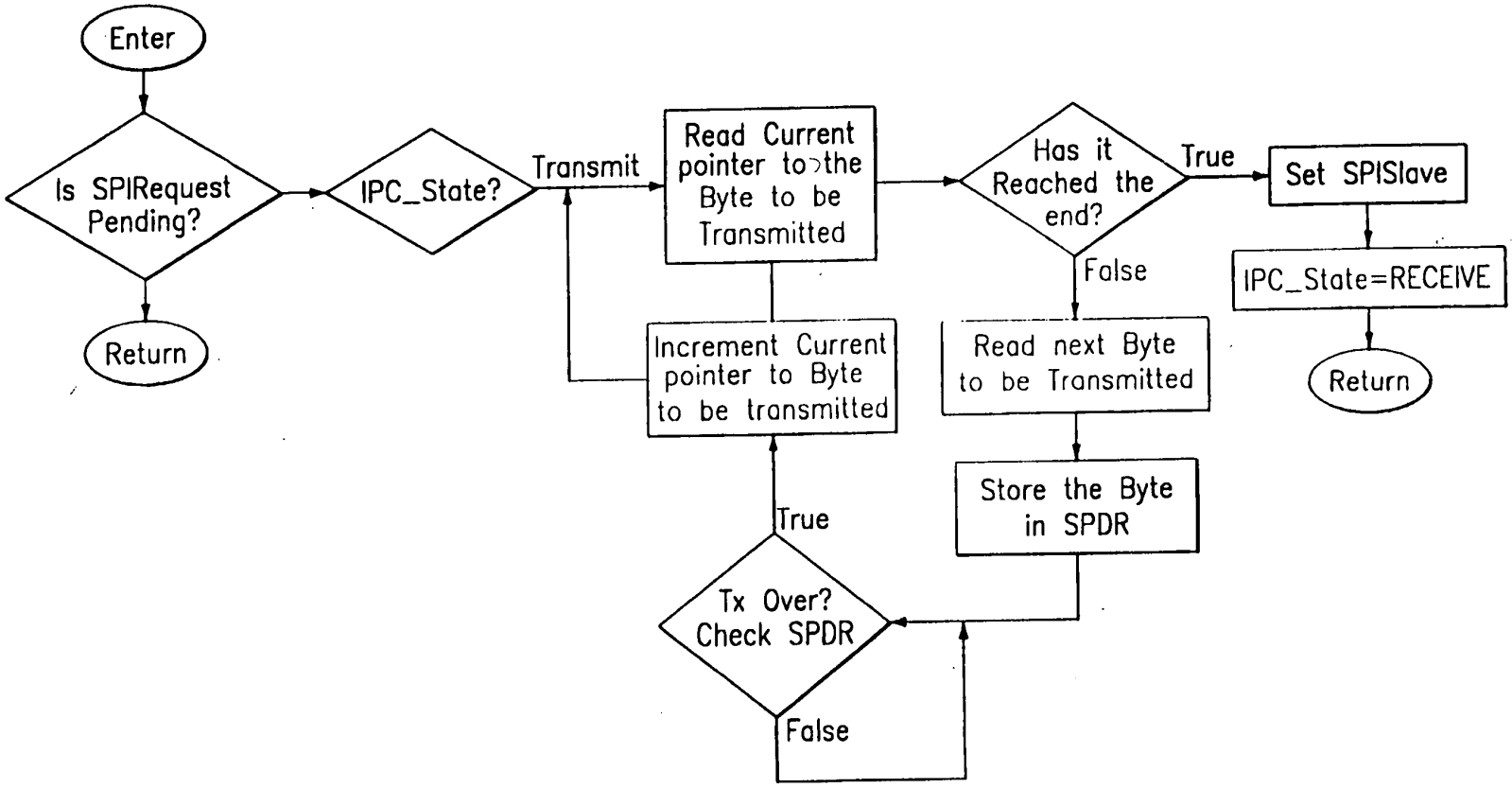


FIG. 108